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ALIGNMENT OF NATIONAL FISHERIES AND AQUACULTURE STRATEGIES TO THE POLICY FRAMEWORK AND REFORM STRATEGY FOR FISHERIES AND AQUACULTURE IN AFRICA (PFRS)

SUDAN



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EXECUTIVE SUMMARY:

This report provides a comprehensive review and assessment of the alignment of Sudan's Fisheries and Aquaculture Policy (2012) and the National Agricultural Investment Plan (NAIP) with the Policy Framework and Reform Strategy for Fisheries and Aquaculture in Africa (PFRS). It also assesses relevant global and regional instruments, considering climate change adaptation and its impacts on fisheries, aquaculture, and aquatic ecosystems.

Sudan has significant fisheries potential, both inland (Nile River and its tributaries, reservoirs, and lakes) and marine, with a Red Sea coastline of approximately 853 km characterized by rich biodiversity, including coral reefs and mangroves. The country also possesses vast fertile land and water resources that could support the development of sustainable aquaculture to contribute to the growth of the sector.

Sudan has developed several policie and strategic frameworks, including the National Fisheries and Aquaculture Policy (2012), the National Agricultural Investment Plan (2016–2020), the Blue Economy Strategy (2023–2027), and other relevant frameworks related to biodiversity and climate change. However, the fisheries and aquaculture policy remains largely unimplemented and lacks integration of key emerging issues, particularly climate change.

The analysis indicates a moderate level of alignment with the PFRS, with an overall alignment score of 53.4%. Key gaps identified include outdated legislation, weak institutional capacity, insufficient data systems, limited stakeholder coordination, and inadequate domestication of global and regional instruments. Climate change considerations are also insufficiently reflected in the current policy framework.

To strengthen alignment and improve sector performance, the following priority actions are recommended:

- Update the National Fisheries and Aquaculture Policy and the National Agricultural Investment Plan, ensuring stronger stakeholder participation;
- Integrate climate change adaptation, mitigation, and disaster risk management into sector policies;
- Revise and modernize fisheries and aquaculture legislation to enhance effectiveness;
- Strengthen institutional frameworks and human capacity to improve coordination and governance;
- Improve fisheries data collection, analysis systems, and establish a functional fisheries database;
- Accelerate the domestication of relevant global and regional instruments through appropriate institutional mechanisms.

Overall, Sudan's fisheries and aquaculture sector shows partial alignment with continental frameworks. There is a clear opportunity to strengthen this alignment through policy updates, improved governance, and enhanced consideration of climate change and current socio-economic challenges, including the ongoing conflict.

Since 2023, Sudan has been affected by conflict, which has had severe impacts on livelihoods, infrastructure, natural resources, and key socio-economic sectors. In this context, increased regional and international technical and financial support to the fisheries and aquaculture sector is critical to support recovery and long-term resilience.

ACKNOWLEDGEMENTS:

I would like to express my sincere appreciation to AU-IBAR for providing the opportunity to review, analyze, and assess Sudan's Fisheries and Aquaculture Policy and the National Agricultural Investment Plan in terms of their alignments and consistency with the Continental Framework of Policy Framework and Reform Strategy (PFRS) to effectively contribute to commitments of CAADP Kampala declaration and action plane and ultimately to the African Union Agenda 2063-The Africa we want.

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List of Acronyms

ACP	Africa, Caribbean and the Pacific
AFRM	African Fisheries Reform Mechanism
AU	African Union
AU-IBAR	African Union- Inter Bureau for Animal Resources
AU-MS	African Union Member States
BCM	Billion Cubic Meters
BDS	Business Development Services
BUR	Biennial Update Report
CADAAP	Comprehensive African Agriculture Development Program
CAMFA	Conference of African Ministers of Fisheries and Aquaculture
CBD	Convention on Biological Diversity
CCA	Climate Change Adaptation
CEN-SAD	The Community of Sahel-Saharan State
COMESA	The Common Market for Eastern and Southern Africa
DRM	Disaster Risk Management
EAFM	Ecosystem Approach to Fisheries Management
EMS	Estuarine and Mangrove-based Shellfisheries
EU	European Union
FAO	Food and Agriculture Organization
FishGov2	Fish Governance Phase 2
IGAD	Intergovernmental Authority on Development
IPAs	Investment Plan Areas
GBFEAS	Kunming-Montreal Global Biodiversity Framework Early Action Support
GDP	Gross Domestic Product
PFRS	Policy Framework and Reform Strategy
MARF	Ministry of Animal Resources and Fisheries
MCS	Monitoring, Control and Surveillance
NAIPs	National Agricultural Investment Plans
NBSAP	National Biodiversity Strategy, and Action Plan
RAIPs	Regional Agricultural Investment Plans
REC	Regional Economic Community
RFBs	Regional Fisheries Bodies
RFMO	Regional Fisheries Management Organization
SWOT	Strengths, Weaknesses, Opportunities, and Threats
UNEP	United Nations Environmental Programme
USD	United States Dollar
WSSD	World Summit on Sustainable Development

CHAPTER 1: SUDAN'S FISHERIES AND AQUACULTURE SECTOR

1.1. BACKGROUND ABOUT SUDAN

1.1.1. Location

Sudan is geographically located at the crossroads of Sub-Saharan Africa and the Middle East and stretches across the Red Sea. Sudan shares borders with seven countries including Libya and Egypt to the North, Chad to the West, the Central African Republic to the South-West, South Sudan to the South, Ethiopia to the South-East and Eritrea to the East. The White and Blue Niles meet in Khartoum, the capital city of Sudan, and merge to become the Nile River that flows all the way to the Mediterranean Sea via Egypt. Sudan has a Sahelian belt with the desert in the far north, fertile land in the Nile valleys, the Gezira and across the rest of the country from Darfur to Kassala via Blue Nile and Kordofan States for farming and livestock herding. Sudan is in the north eastern part of Africa, and occupies 1,886,000 square kilometers, making it Africa's 3rd largest country by the area. Before the secession of South Sudan in 2011, Sudan was the largest country in Africa. Sudan is the 16th largest country in the world by land area. The Sudan has a 530-mile (853 km) coastline bordering the Red Sea.

1.1.2. Sudan Climate

In Sudan, the climate is desert in the north and on the coast of the Red Sea, while it's semi-desert or semi-arid in the south, which is affected by the summer monsoon. Summer temperatures often exceed 43.3 degrees Celsius (110 degrees Fahrenheit) in the desert zones, and rainfall is negligible. Dust storms frequently occur in desert zone. High temperatures also occur in the south throughout the central plains' region, but the humidity is generally low. Winter is characterized by a sunny weather everywhere, except on the Red Sea coast, where there can be a bit of cloudiness and some showers; in the south and the east, it's hot during the day, but generally cool at night, while in the north, it can get cold at night. By February, the temperature begins to rise across the country, and in the south, where it was already intense, it becomes scorching.

1.1.3. Population

Sudan is both an African and Arab country, with Arabic being the most widely spoken language. Over 97% of the population are Sunni Muslims with a small Christian minority. Sudan's population has been growing rapidly. Since 2008, the year of it last census, the estimated population has grown to 44.91 million in 2021, an average annual growth rate of about 3% over that period. Total estimated GDP (based on purchasing power parity) in 2018 was USD 177.7 billion; USD 4,232on a per capita basis. The population of Sudan is young, with about 42% of the population being under the age of 15.

The country is dominated by Muslims, most of whom speak Arabic and are for the most part ethnically mixed. Despite a common language and religion, the people are highly differentiated in their mode of livelihood and comprise city dwellers, village farmers, and pastoral nomads. The tribal system has largely disintegrated in urban areas and settled villages, however, and retains its strength only among the nomads of the plains who raise cattle, sheep, and camels.

1.1.4. Sudan Economy

Sudan is rich in arable land, natural resources, a young workforce, and agricultural opportunities, Sudan's rich endowment of natural resources, including natural gas, gold, silver, chromite, manganese, gypsum, mica, zinc, iron, lead, uranium, copper, kaolin, cobalt, granite, nickel, tin, and aluminum offer significant economic potential. However, these resources have yet to be fully realized. Moreover, the secession of the oil-rich South in 2011 initiated a declining economic trend. IMF figures indicate that GDP halved between 2011 and 2019. The 75% decline in oil income resulted in both a trade and fiscal deficit, which led to a substantial devaluation of the currency and rising inflation.

Sudan's exports are dominated by gold, sesame seed, livestock, crude oil and groundnuts, and accounted for 82% of all exports in 2019. Historically, agriculture has remained the main source of income and employment in Sudan, employing or providing livelihoods for more than 60% of the population. However, neglect of traditional smallholder agriculture and nomadic animal husbandry saw the sector's share of GDP dip in recent years. This trend, combined with the exodus from the conflict- or poverty-affected areas of the country, has contributed to a high rate of unorganized urbanization in and around the larger cities.

Sudan is a member of a variety of Regional Economic Communities (RECs) aimed at fostering beneficial trade relations. These include the intergovernmental Authority on Development (IGAD), the community of Sahel-Saharan States (CEN-SAD) and the Common Market for Eastern and Southern Africa (COMESA).

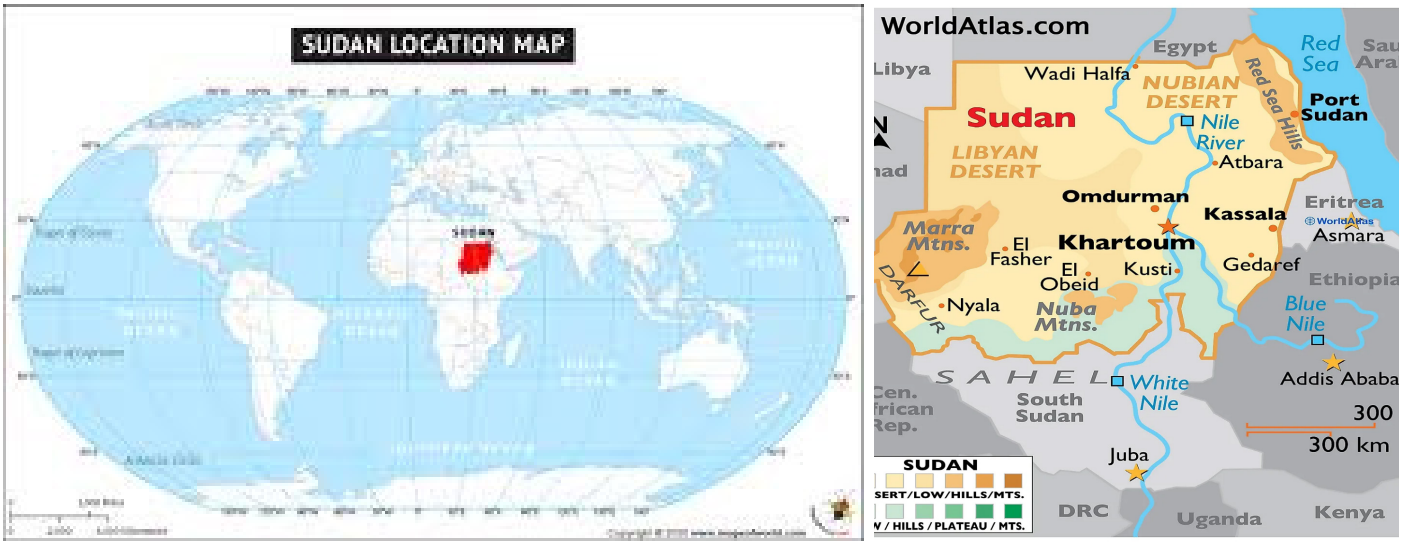


*Fig. 1: Map of Sudan (*https://www.google.com/url?sa=t&source=web&rct=j&opi=89978449&url=https://www.worldatlas.com/maps/sudan&ved=2ahUKEwid0cKh-qqRAxWVRKQEHXGpE18Qh-wKegQIGhAE&usg=AOvVaw3zZ7-zcOJYS2wYGde7SlUc

CHAPTER 2: FISHERIES AND AQUACULTURE SECTOR IN SUDAN

2.1 Introduction:

The fisheries and aquaculture sector in Sudan plays vital role in food security, providing an important source of food, income, and employment for thousands of people and combating rural poverty, especially for those who live along River Nile and its tributaries, and for those who live in the coastal localities of Red Sea State, where there are no more options and alternative livelihoods, because of the region's arid natural conditions. Sudan's national fisheries sector suffered a loss of about 70% of production because of the loss of the Sud wetlands on secession of South Sudan.

Sudan Fisheries and aquaculture sector compromise of inland water fisheries and marine fisheries in Red Sea, Sudan has a coastline of 853 km. Despite this, the contribution of fisheries to GDP is low.

The fisheries sector in Sudan, has experienced inadequate strategic direction and guidance resulting in the lack of a coherent and cohesive framework for decentralized sector management and development. The deficiency in institutional linkages is reflected in poor communication and information flow both vertically and horizontally between different levels of government. Institutional co-operation and collaboration between the center and States and between different States is weak. There are disconnected plans being formulated, financed and implemented at State and local levels that on some shared water bodies, can have conflicting direction and objectives.

2.1.1. Marine Fisheries:

Sudan has a Red Sea coast of about 853 kilometers, with Egyptian boundaries in the north, and south boundaries with Eritrea. including flourishing coral reefs, and mangroves. Also, there are two World heritage sites in Sudan Red Sea declared by UNESCO in 2016, Sangnaeb atolls and Dongunab bay, the same two sites were declared as Marine Protected Areas (MPAs) in 2004. Sudan marine fishing sector provides job for local communities, especially for people in coastal localities in the Red Sea State. The declared Exclusive Economic Zone (EEZ) is of 91.600 km^2 including shelf area of 22.300 km^2. There is only one central fish market along the Sudanese Red Sea coast has in Port Sudan. There are small natural fishing harbors (mersas), in addition to three fish landing sites. There is a high biodiversity in Sudanese Red Sea coast including many species of soft and hard corals, sharks and rays, fin fish, marine invertebrates, sea grass beds, ornamental fish, dugong, and marine turtles. The annual fish landing from Sudanese Red Sea is estimated 3000 ton/year. There are an important spawning grounds in Sudan's Red Sea coast for oyster (mother of pearl), sea turtles, important commercial fin fish species, ornamental fish, crustacea, sea cucumber, Mollusca, Sharks and rays.

Marine fishing sector is combined of two types of fishing activities as follows:

2.1.1.1. Artisanal fishing: The entire domestic fishing fleet is artisanal and small-scale and is mostly confined in inshore waters including lagoons and bays. This is the permanent fishing activity by local fishers, in Sudan Red Sea Coast, with fiberglass and wooden boats ranging from 7-12 meters in length, most of them with

outboard engines (15 -40 horsepower), using gill net, hook and lines, and other fishing tools. 90% or more of commercial fish species from coral reefs habitats, using hooks and line, and the rest from different fishing areas except corals using gill nets. The total sustainable fish harvest available to Sudan's EEZ in Red Sea is estimated at around 30.000 tons per year. The fish production marketed locally (fresh, or iced), in Port Sudan local fish market. This type of fishing managed by State Marine Fisheries law 2008, which was amended in 2016, but the amendment is still pending formal approval. 2.1.1.2. Commercial fishing: seasonal fishing operation, uses bottom trawlers and purse seine nets, foreign fishing metallic vessel ranging from 22 to more meter length. Targeting shrimps, some bottom fish species, and sardine and other fin fish species. The production marketed in Egypt. This type of fishing was managed by commercial fishing committee, By-Law 2007.

Marine fishing sector, combined from some governmental institutes, such as Marine Fisheries Administration, Red Sea Fisheries Research Station, Faculty of Marine Science and Fisheries., and some NGOs such as fisher's associations, fisher s friends association (women association), and intelligence, navy, and others.

2.1.2 Inland water Fisheries:

The inland fisheries in Sudan are small-scale, multi-gear, and multi-species fisheries. They are artisanal, operated by regular and seasonal fishers, using traditional fishing gears, such as gill nets, traps, hook and line, and seine nets. The inland water area in Sudan combined of rivers, reservoirs, dams and lakes, covers about 2 million hectares. The White Nile and Blue Nile, originating in Central Africa lakes and Ethiopian highlands respectively, they join at Khartoum to form the River Nile (the main Nile), that flows northwards through Egypt to Mediterranean Sea. The estimated sustainable potential of annual freshwater fish production is between 50.000 and 60.000 tons/year. The actual level of production is around 36.000 tons/year. There are 136 species of freshwater fish listed as recorded in Sudan, commercial fisheries regularly exploit more than 20 of these species, which differ in size, shape, growth rate and consumer acceptance. Maintenance of fish species diversity is especially important in an age of growing uncertainty due to climate change. Predominant fish species include Tilapia, Synodontis spp, Labeo spp, Bagrus spp, Lates niloticus, Hydrocynus, Alestes and The Mormyrus spp.

The relative importance of each species in commercial catches varies from place to place, seasonally and between different years. The multi-species fisheries deploy multiple gears such as gill nets, seine nets, hooks and traps mainly on reservoirs with much less fishing on the River Nile and tributaries along the extensive stretches of water between reservoirs. Fisheries are small-scale in nature, which maximizes sharing of access and benefits from fishes as common property resources through employment and incomes. Fisher traders and fishermen have for many years organized themselves in different ways into unions and cooperatives but the benefits of group formation to members are not clear.

2.1.3. Aquaculture in Sudan: Sudan has a variety of water resources across the country, which gives an opportunity to enhance and increase fish production from aquaculture practices.

2.1.3.1. Inland water aquaculture:

Freshwater aquaculture practices began in 1953in Fisheries Research center at (Elshagara) which is located at the White Nile. The most popular cultivated species is Tilapia sp. extensive and semi-intensive pond culture

of indigenous Nile tilapia expanded in Khartoum State. Estimates of the number of fish farms vary. Khartoum State alone is reported to have more than 77 farms comprising about 500 hectares. Total annual production may exceed one thousand (1000) tones. This includes production from earthen and concrete ponds and around half of them depend on wells for their water supply followed by supply from canals and directly from the Nile. An estimated 79% of all cage culture is done in Nile State (985 cages though these numbers are changing with new developments).

2.1.3.2. Marine Aquaculture:

For Aquaculture practice in marine sector (Red Sea), currently, there are not any aquaculture activities in Sudan Red Sea Coast, in spite of the ancient oyster farming in Dungonab bay, since 1904. Where mother of pearl Pinctada sp. Cultivated in northern part of Sudan coast till 2010, in the period from 1998 -2010 there was the pearl farming activity, by private sector company. From 2007-2014 there was an activity related to shrimp farming, two private sector companies worked in shrimp farming, one located south of Port Sudan, and the other south of Port Sudan.

2.2. Infrastructure in Sudan Fisheries Sector:

Sudan is a large country, with relatively high potential of wild fisheries, and aquaculture, due to the existence of some water bodies like Red Sea, River Nile and its tributaries (White Nile, Blue Nile, and Atbra River). The infrastructure of Fisheries sector in Sudan, can be summarized as follows:

2.2.1. Reservoirs: There are six dams across the Nile in Sudan. These are:

2.2.1.1. Sennar, on the Blue Nile. Built in 1925, with an area of around 160 km^2, and annual fish production of 1.100 ton/year. With a capacity of 0.07 billion cubic meters (BCM).

2.2.1.2. Jebel Awlia on the White Nile. Buit 1937 with annual fish catch is around 6000 ton/year. There are around 2500 permanent fishers, and 2000 seasonal, with about 550 boats, most of them without engines. With a capacity of 3.0 BCM.

2.2.1.3. Khashm al Girba on Atbara River. Built 1964 with a capacity of 0.8 BCM. The total annual catch is about 400 ton/year, with about 375 fishers, and they have about 230 boats. The annual flushing out of water to remove the sediments, causes fish mortality and periodic stock reduction. A major cage-culture development was begun on the reservoir in 2012.

2.2.1.4. Roseires Dam on the Blue Nile. Built 1966 (heightened in 2014). The annual fish catch is about 1500 ton/year capacity of 7.0 BCM.

2.2.1.5. Merowe Dam on River Nile (main Nile). Built 2009 and completed in July 2010, with estimated potential annual fish production of about 6600 ton/year. With a capacity of 12.0 BCM.

2.2.1.6. Atbara/Setit Dam Complex (under construction).

Also, Aswan Dam (1964, North State) on the Nile in Egypt created Lake Nasser, which extends into, Sudan where is called Lake Nubia. Annual fish landings in Sudan from Lake Nubia are around 2000 ton/year, there are around 500 boats, with a crew of one to three fisher/boat.



Fig. 2: Sudan Dams (source: http://www.researchgate.net)



Fig. 3: Sennar Dam



Fig. 4: Roseires Dam

2.2.2. *Fish Landing sites:*

There are three main landing sites along Sudan Red Sea Coast, constructed by UNIDO, in the year 2012, one in the North Sudan coast (Oseif landing site), the second in Mohamed Qoul north of Port Sudan, and the third one is in Suakin, south of Port Sudan. Only one landing site is working now (Osief), the other two, were out of service and they have since collapsed.



Fig. 5: Oseif Landing Site

2.2.3. Fishing ports:

There are no equipped fishing ports, except Hydob port for animal resources exports in Red Sea coast, still not working. There are many small different rests and shelters scatters along Sudan Red Sea Coast (mersas) as Agig marsa.



Fig. 6: Hydob port for animal resources and fish exports



Fig. 7: Marsa Agig

2.2.4. Fish Markets:

Most of the fish and fish products, are marketed locally, and some fin fish species are exported to neighboring countries like Saudi Arabia, and ornamental fishes and sea cucumber, are being exported to some Asian countries.



Fig. 8: Port Sudan Central Fish Market (Sigala)

2.3. Institutional and Legislative Framework for Fisheries and Aquaculture in Sudan:

The competent authorities for Fisheries and Aquaculture, under the umbrella of Ministry of Animal Resource and Fisheries (Federal), and Ministry of Production and Economical Resources (States level). The sector consists of Administerial authorities, Fisheries General Administration, Marine Fisheries Administration. And Research institutes, and academic colleges and institutes. In addition to fishermen societies.

2.3.1. Institutions in Fisheries and Aquaculture Sector:

It consists of governmental and non- governmental bodies. The Fisheries General Directorate and Fisheries Research are under the umbrella of the Ministry of Animal Resources and Fisheries as illustrated in the figure below (fig. 9). In addition to the other authorities like: Navy, economical security, environment, academic faculties related to fisheries sciences and marine sciences, and non- governmental bodies such as private sector, fisher associations and societies, boat builders, NGOs.

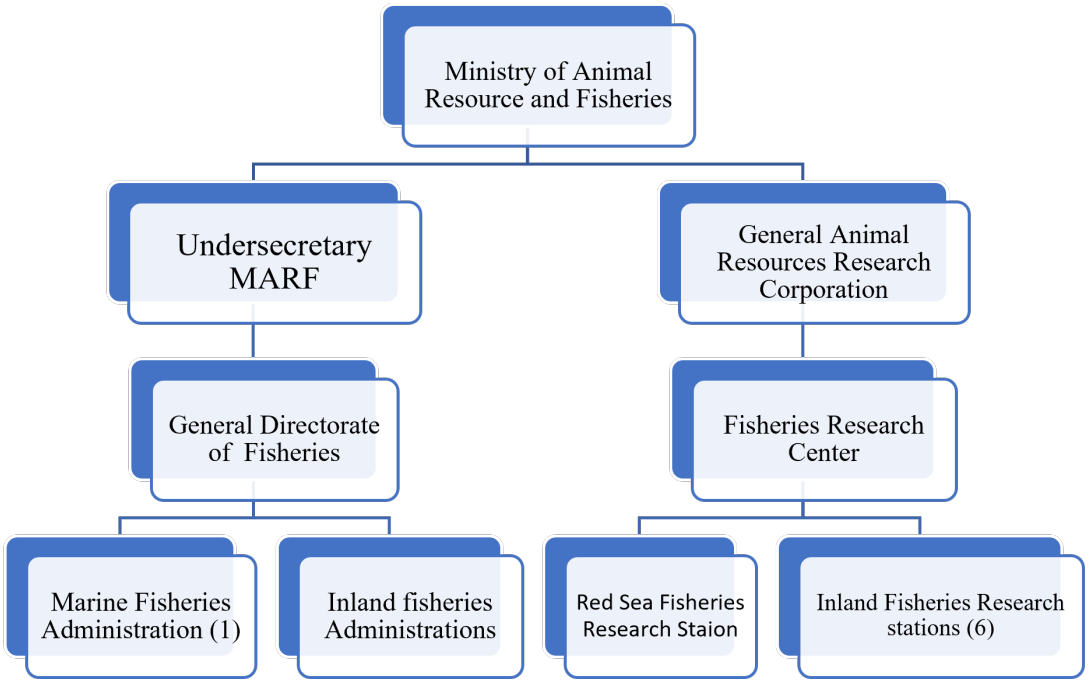


Fig. 9: The main Administrative and Research institutes Related to Fisheries Sector

2.3.2. Legislative framework and Strategies Related to Fisheries and Aquaculture Sector in Sudan:

It was combined from the following:

- **Freshwater Fishing Law (1954), as amended (1960) and (1995):**

This is the current inland fisheries legislation in force. FAO commissioned an expert in July- September 1998 to update and complete the missing links. The new version proposed by the expert under the title "The Federal Inland Fisheries Act is documented in FAO report (TCP/SUD/6611) but not yet put into force.

- **Marine Fisheries Ordinance (1937):**

This an old ordinance is aimed at regulating fishing and use of marine resources in territorial waters, and was in use until its amended in 1975, when it was renamed the "Marine Fisheries Regulation. The major amendment included banning of spear and guns in fishing, collection of corals and ornamental fish without permission, or dumping of wastes in water, in addition to regulation of marine engineering and coastal development activities.

- Red Sea State Marine Fisheries Law 2008 amended 2016.
- Environment Conservation Act (2001).
- Sea Ports Corporation Law (1974).
- Red Sea Commercial Fishing Regulation By-Law (2007): This By-Law for controlling Bottom trawling and purse seining fishing activities in Sudan Red Sea Coast, through the determination of fishing areas, fishing

season from November to May annually, and determination of the number fishing vessels.

The Commercial fishing organizing committee which was established in 2015 by Red Sea State Governor (Wali), to manage and organize bottom trawling and purse sein fishing, in this type of fishing, seasonal fishing operation from (November to May) was applied using commercial fishing regulation by-law (2007). Currently no bottom trawling and purse seining activities, it banned by Red Sea governor (Wali) in 2019.

- Marine Fisheries Administration management tools: represented by committees, such as:
- Ornamental Fish organizing committee: established by Director of Marine Fisheries Administration, to regulate ornamental fishing exploitation.
- Sea Cucumber Organizing committee: established by Marine Fisheries Administration Director, to regulate sea cucumber fishing operation. Those committees combined members from; Marine Fisheries Administration, Red Sea Fisheries Research Station, Faculty of Marine Science and Fisheries, navy, Fisher representative.
- National Fisheries and Aquaculture policy (2012).
- National Blue Economy Strategy of the Sudan (2023- 2027).

Sudan has a diverse political, social, and economic environment, with vast endowments of land, human capital, and other natural resources. The Blue Economy (BE) goals are to promote economic growth, social inclusion, cultural preservation, and livelihood improvement while ensuring the environmental sustainability of water ecosystems and their surroundings. With IGAD assistance, Sudan has produced a BE baseline national report that assesses the country's Blue Economy contribution. In order to make the best use of the BE resources, IGAD assists the member states in developing BE strategy at national level to set the stage for sustainable utilization. This national strategy describes the position of BE sectors, difficulties, and the required intervention objectives and goals; a comprehensive action plan should be established to ensure the Strategy's adoption. The strategy will serve as a road map for the country's Blue Economy and a tool for mobilizing resources to develop the sectors.

Table (1) Summarize Legislations and Strategies Related to Fisheries and Aquaculture sector in the Sudan.

Legislation/Act/Strategy	Status	Comments
Freshwater Fishing Law (1954)	In force, amended (1960) and (1995)	The law needs to be updated
Marine Fisheries Ordinance (1937)	Amended to Marine Fisheries Red Sea State Law (2008), amended (2016)	The law needs to be updated
Red Sea State Marine Fisheries Law 2008 amended in 2016	In force	Amendment and substitution in 2016 of (4) articles of the original law (2008)
Environment Conservation Act (2001).	In force	Implemented by Higher council for Environment and Natural Resources
Sea Ports Corporation Law (1974).	In force	Implemented by Sea Ports Corporation in Red Sea State, the corporation under the umbrella of the Transport Ministry.

Red Sea Commercial Fishing Regulation By-Law (2007)	In force. But the bottom trawling has been prohibited since (2019)	The by-law implemented by the committee, combined about (11) authorities in Red Sea State, such as Ministry of Production and Economic Resources, Ministry of Finance, Marine Fisheries Administration, Red Sea Fisheries Research Station, Faculty of Marine Sciences and Fisheries, Fishermen association, Navy, Economic security, Private Sector, Environment and maritime security.
National Fisheries and Aquaculture policy of the Sudan (2012)	Not implemented	The strategy not implemented and not updated.
National Blue Economy Strategy of the Sudan (2023- 2027)	Not implemented	The Existing sectors of Sudan Blue Economy include: 1. Fishery and Aquaculture, 2. Maritime Transport 3. Coastal and Inland Tourism, 4. Desalination 5. Hydro power Energy 6. Oil and gas Extraction 7. Research and Education.

2.4. Review and Analysis of Sudan□ s Fisheries and Aquaculture Policy 2012:

2.4.1. Review of Sudan Fisheries and Aquaculture Policy 2012

This is the first national fisheries and aquaculture policy in Sudan. Developed with Technical and financial support from EU/ ACP Fish program. The participatory policy was developed by two program Experts and four Sudanese experts, with the consultation and participation of national stakeholders, through three national workshops and interviews and meetings, in three different places in Sudan (Khartoum, Port Sudan, and Halfa). The objective of the National Fisheries Policy is to provide coherent direction for the development of sector that is shared by primary stakeholders in both the public and private sectors, and which is in consonance with Government □s wider strategic planning and development objectives, the policy was a timely response to the need for an over-arching framework to guide and co-ordinate planning processes and plans at all levels in the fisheries sector and to harmonize implementation to achieve improved efficiencies and positive impacts. Despite that, according to undersecretary of animal resources ministry; to date, only about 10% of this strategy has been implemented. This is mainly due to the low budget allocation by the government to the sector. In addition to that, the sector is facing problems in the areas of communication, availability of information, poor coordination and lack of cohesion between and within the various administrative levels of government.

Policy Vision:

A fisheries sector in which Sudan's fish resources are protected and used wisely for sustainable production to bring lasting benefits to its people and future generations.

Overall Objective of the Sudan National Fisheries and Aquaculture Policy:

The overall aim of the National Fisheries Policy is to: "Provide coherent direction to the fisheries sector of Sudan by defining priorities' development aims, strategies and institutional roles of government, fisheries

communities and the fisheries industry so as to increase the contributions of the sector to national food security, economic growth and employment whilst conserving biodiversity and environment.

The Pillars of the Sudan Fisheries and Aquaculture Policy

The Policy provides a shared vision towards which all those stakeholders responsible for attaining this vision can move forward in a systematic and cohesive manner. The policy sets out its overall objective against which progress in implementing policy can be monitored. It presents the core principles underpinning and guiding policy direction in the years ahead. This direction is divided into six policy pillars. Within each pillar, clear objectives are set out with underlying, prioritized strategies designed to meet key challenges. The policy prescribes the principal roles and mandates of public and private sector stakeholders for policy implementation. The policy pillars are:

Pillar 1. Improved Governance Framework: The aim of this pillar is to establish more effective governance in fisheries institutions at all levels, from federal to local levels and to increase communication, cooperation and collaboration between them. This requires institutional restructuring and strengthening by training to ensure staff are capable of delivering their mandated services. Governance guidelines will steer the formation of a more harmonized private sector capable of taking on responsibilities of fisheries co-management.

Pillar 2. Secured Fisheries Financing: In the absence of adequate and dependable financing, implementation of this policy will not be possible. This pillar therefore, maintains a sharp focus on financing challenges and prescribes strategies to meet these challenges. It aims to undertake economic valuations of the sector and to raise the profile and status of the sector at all level. The pillar sets out innovative strategies to increase external financial support from outside the fisheries sector for both inland reservoir fisheries and marine fisheries. It also aims to increase co-ordination of support from development partners to the sector. Strategies are also set out for increased self-financing from within the sector itself by ensuring a higher proportion of the revenue generated by fisheries is ploughed back for fisheries and aquaculture management and development.

Pillar 3. Unleashing the Potential of Aquaculture: Aquaculture offers greater opportunities for increased fish production than capture fisheries. Inland freshwater aquaculture offers more immediate opportunities for expansion and development than mariculture on the Red Sea. On the latter, great care is needed to assess environmental impacts of mariculture proposals on the most pristine and highly valuable coral reef and mangrove habitats. To realize the full potential of freshwater aquaculture, there will be closer integration of planning and implementation of fisheries, agricultural development and water resources management programs. More efficient, integrated use of water harvesting and irrigation affords room for aquaculture development using technology and knowledge transfer from proven successes outside Sudan. The Government is committed to providing a more enabling and supportive environment to larger-scale commercial aquaculture linked to modern fish quality assurance and marketing system.

Pillar 4. Effective Fisheries Co-management: The Government is adopting a participatory co-management approach in which rights and responsibilities for management are shared with fisheries communities. This is relatively new approach that will be closely coordinated and guided by Government to harmonize institutions

but at the same time allows communications of the opportunity for self-organization. The organizational and fisheries management capabilities of community association will be strengthened by training. The Government will guide communities in their active involvement in fisheries information collection and development of local fisheries management plans. Community organizations is expected to play an increasingly important role in self-regulation to eliminate illegal fisheries practices. It is anticipated that if communities can be sufficiently well-organized to meet these challenges, then fish stocks should recover and be sustained brining lasting benefits to communities and the nation at large.

Pillar 5. Business and Trade Development: The private sector is considered as the engine of future growth of the fisheries sector. The Government aims to play an enabling and supportive role in helping drive private sector growth. The integration of fisheries into a future national economy driven by revitalized agricultural development requires a business development approach to be adopted by government and private sector stakeholders alike. This will require close collaboration with Business Development Services (BDS) organizations and programs in Sudan to provide specialized BDS support to small and medium fisheries business enterprises (SMEs) and fisheries associations. Future development of the sector needs a vibrant and dynamic private sector willing to invest in large-scale ventures. This requires an enabling and supportive environment to provide y banking and other financial institutions. A major thrust will be in securing improved fish quality and value addition linked to increased marketing efficiencies. Mechanisms will be established to strengthened fish trade as a driver to improved resource management.

Pillar 6. Food Security Enhanced by Fisheries: As the human population in Sudan rises and gaps between food supply and demand widen, the issue of national food security is of the highest priority. The importance of fish as a crucial element in diets, especially the diets of infants, young children and pregnant women, is now widely recognized. A few hundred grams of fish consumed at a subsistence level, can make the difference between good and bad nutrition, between recovered health and prolonged illness or between food security and starvation. The aim of this pillar is to promote fish as a vitally important part of people □s diet throughout the country, to increase supply of fish primarily suited to improve national food security, such as small pelagic species, and to promote wider availability and access to fish.

Nothing included or mentioned about climate change in the 6 pillars of Sudan National fisheries and aquaculture policy. For this and other unmentioned issues in the policy should be updated.

2.4.2. Analysis of Fisheries and Aquaculture Policy 2012:

Sudan National Fisheries and Aquaculture policy 2012, was developed too late, compared with the history of fisheries in Sudan, with fisheries laws dating back to 1937. Despite the development of policy since 2012, but it has not been implemented, and it needs to be updated to include some issues and to fill the gaps, to be highly aligned with African Fisheries and aquaculture policies and strategies. The budget for fisheries policy and strategy is not specified, and the lack of allocated budget, one of the constraints.

Table (2): Policy areas for Africa, and policy areas of Sudan, for Fisheries and aquaculture

Policy areas of Africa PFRS	**Policy areas of Sudan Fisheries and Aquaculture Policy**	**Comments**
1.Conservation and Sustainable Fisheries and Aquaculture Resource Use.	- Legislation - Financing - Business, investment	-Lack of specified budget allocated for fisheries-weak contribution of private sector. Represents a constraint for sustainable fisheries and aquaculture management.
2.A Small-Scale Fisheries Development	- Financing - Legislation	Lack of specified budget allocated for fisheries-weak contribution of private sector, and lack of trained labors, represent as constrains for small scale fisheries development.
2.B Identification, Development and Promotion of Estuarine and Mangrove-based Shellfisheries (EMS) among the AU-MS.	- Research - planning	In pillar No.3 mentioned "great care is needed to assess environmental impacts of mariculture proposals on the almost pristine and highly valuable coral reef and mangrove habitats □
3. Sustainable Aquaculture Management	- Aquaculture	Aquaculture offers greater opportunities for increased fish production than capture fisheries
4. Responsible and Equitable Fish Trade and Marketing	-Fish Trade	The integration of fisheries into a future national economy driven by revitalized agricultural development requires a business development approach, to be adopted by government and private sector stakeholders alike.
5. Regional and sub-regional cooperation	-	PERSGA, and AU represent regional cooperation, with Sudan and the states of the region, through the projects, protocols, conventions, as Jeddah convention, signed in 1982.
6.Awareness Enhancing and Human Capacity Development	- Human Resources Development -Institutional structure	In policy pillar1.The performance in implementation of plans will be monitored, from which lessons will be learned and skills improved accordingly through training.
7. High Seas Fisheries	-	Sudan is a member of Indian Ocean Tuna commission (not active member)
8. Cross Cutting Issues in African Fisheries and Aquaculture 8.A. Strengthening resilience and reducing vulnerabilities to climate change in African fisheries and aquaculture. 8.B. Gender and youth 8.C. Private sector investments and financing mechanisms for fisheries and aquaculture in Africa	 - Research - MCS Business promotion and investment	Red Sea facing a range of climate change threats associated with a rising ocean temperature which can harm corals; increased concentrations of carbon dioxide in the sea surface which can lead to Red Sea acidification, and rising sea levels which can force inland migration of mangroves and adversely impact coastal communities (NDC, 2021)

Table (3): Summary matrix of the SWOT Analysis for Sudan Fisheries and Aquaculture Policy

Strengths	**Weaknesses**
• Existence of related institutions. • Suitable climate elements for aquaculture • Relatively clean waters (free from pollutants) • Existence of manpower and energy sources. • High marine biodiversity • Geographical location of Sudan, suitable for link to external markets and exportation.	• Weak institutional capacities in terms of manpower and research (specially in terms of stock assessment). • Insufficient infrastructural facilities, especially in the areas of monitoring, control and surveillance (MCS) • Weak policy framework and fisheries legislation; • Poor data collection and inadequate information on fishery resources; • Low development of aquaculture • Relatively high fish post-harvest losses resulting from improper handling throughout the distribution channel and very limited access to markets due to poor road infrastructure. • Weak organizational capacity of community fisheries associations. • Regional Agricultural Investment Plans Weak linkage between different community fisheries associations
Opportunities	**Threats**
• The most likely source of increased production • through the adoption of proven technologies. • Development opportunities exist in capture fisheries and aquaculture in the marine waters of the Red Sea and fresh water. • Prevailing high fish prices add to the commercial attraction of large-scale ventures. • Cage culture in both habitats affords development potential and major programs are already underway • There may be some scope for expanding the more offshore pelagic fisheries on the Red Sea. • The absence of light-attraction fisheries for small and highly productive freshwater pelagic species offers promising potential for reservoir fisheries development and increased fish production contributing to • improved food security and fish feed for aquaculture.	• Low sector profile, status and perception of its value. • inadequate Technical guidance. • Inadequate baseline information on land and water availability for aquaculture. • Inadequate promotion and support by Government to stimulate medium and large-scale commercial interests in aquaculture. • Inadequate lesson learning from successful aquaculture and mariculture in neighboring countries, especially Egypt. • Low uptake of commercial aquaculture by the private sector. • Insufficient commercial aquaculture demonstration business models. • Constraints concerning feed costs, availability and quality. • Constraints concerning reliable supply of good quality brood stock and fish fry/fingerlings. • inadequate technical advisory capacity with insufficient knowledge and experience of operating commercial aquaculture enterprises. • Inadequate integration of aquaculture into irrigated agriculture programs. • Inadequate technical support of reservoir cage-culture initiatives. • Inadequate planning for development and expansion of culture-based fisheries. • Inadequate assessment of mariculture potential and impacts, and planning form expansions in mariculture. • Inadequate fisheries management capacity of local governments and community, fisheries associations. • Fisheries illegalities remain widespread and common including unlicensed fishing vessels and fishers. • Fish stocks show signs of overfishing. • Climate Change impacts.

2.5. Conclusion and Recommendations:

2.5.1. Conclusion:

Despite the relatively high potential of water bodies (marine and inland fisheries, lakes, reservoirs, and small water bodies) and high biodiversity in Sudan, per capita fish consumption remains very low, while fish and seafood prices are relatively high compared to the average income levels. This limits the contribution of the fisheries and aquaculture sector to food security.

The estimated sustainable potential of annual freshwater fish production is between 50,000 and 60,000 tons per year, while the current production is around 36,000 tons per year. In addition, the availability of alternative

meat options (such as poultry and beef) reduces fish consumption among local communities.

The limited financial resources allocated to the fisheries sector further reduce its contribution to socio-economic development. Overall, the sector faces several constraints, including weak governance, lack of reliable statistical data, insufficient monitoring and management systems, gaps in capacity building and technology use, and a weak legal framework. In addition, private sector engagement remains limited, and the participation of women in fishing, post-harvest activities, processing, and marketing is still low.

2.5.2. Recommendations:

- Institutional capacity building for the fisheries sector.
- Engagement of the private sector by attracting investment in aquaculture and value addition.
- Updating the National Fisheries and Aquaculture Policy to fill existing gaps and align with the Policy Framework and Reform Strategy for Fisheries and Aquaculture in Africa.
- Encouraging women's participation in the fisheries and aquaculture sector.
- Improving the legal framework (updating fisheries laws and strengthening compliance through awareness-raising).
- Strengthening collaboration and coordination at local, regional, and global levels.
- Preventing, deterring, and eliminating IUU fishing, and enhancing compliance.
- Improving infrastructure and data collection systems and establishing a fisheries sector database.

CHAPTER 2: INTRODUCTION TO THE AU-IBAR ASSIGNMENT

2.1. Background Information:

The African Union (AU) has made several high-level commitments to fisheries reform, such as those expressed at the 2015 World Summit on Sustainable Development (WSSD), the Abuja Declaration, and the Conference of African Ministers of Fisheries and Aquaculture (CAMFA). These efforts led to the development of the Policy Framework and Reform Strategy for Fisheries and Aquaculture in Africa (PFRS) and the creation of the African Fisheries Reform Mechanism (AFRM) as its implementation vehicle. The Regional Policy Framework and Reform Strategy for Fisheries and Aquaculture in the Common Market for Eastern and Southern Africa (COMESA) region is a comprehensive blueprint designed to transform and strengthen the fisheries and aquaculture sectors across the region. These sectors are vital for the socio- economic development of COMESA member states, contributing significantly to food security, employment, and economic growth. The strategy seeks to address existing challenges, capitalize on opportunities, and promote sustainable practices that will ensure the long-term viability and prosperity of these industries. To operationalize the PFRS, AU-IBAR developed a practical implementation guide through a participatory process involving AU Member States, Regional Economic Communities (RECs), specialized institutions, non-state actors, development partners, and experts.

With support from the European Union, AU-IBAR is implementing Fisheries Governance Phase 2 (FishGov2) under the broader program "Enhancing Sustainable Fisheries Management and Aquaculture Development in Africa." The initiative aims to ensure coherent implementation of the PFRS at all levels by promoting policy harmonization and regulatory alignment.

2.2. Objective of the Consultancy:

* The overarching objective of this consultancy is to assess to what extent Sudan fisheries and aquaculture policy is aligned with the Policy Framework and Reform Strategy (PFRS) for Fisheries and Aquaculture in Africa.
* To assess the alignment with Sudan National Agriculture Investment Plan (SNAIP) with policy framework and reform strategy PFRS, policy areas considering environmental management and climate change adaptation action plans.
* Review of relevant global and regional instrument, identify priority area for strengthened compliance, domestication, and institutional coordination.

2.3. Methodology

The assignment was involved:

2.3.1. Stakeholders' engagements, through Virtual consultations with Supervisor from AU-IBAR, and some stakeholders, and Physical consultations including- Under-Secretary of Animal Resources and Fisheries Ministry, Director of General Animal Resources Research Corporation, Director Marine Fisheries Administration, and Ex DG General Fisheries Directorate.

2.3.2. Survey through online Questionnaire identified eight priority policy areas with different outcomes, for introducing strategic reforms to guide the sustainable management and development of fisheries and aquaculture in Africa. These policy areas include:

1. POLICY AREA 1: Conservation and Sustainable Fisheries and Aquaculture Resource Use.
2. POLICY AREA 2A: Small Scale Fisheries Development.
   POLICY AREA 2B: Identification, Development and Promotion of Estuarine and Mangrove based Shellfisheries (EMS) among the AU-MS.
3. POLICY AREA 3: Sustainable Aquaculture Management.
4. POLICY AREA 4: Responsible and Equitable Fish Trade and Marketing.
5. POLICY AREA 5: Regional and Sub-Regional Cooperation.
6. POLICY AREA 6: Awareness Enhancing and Human Capacity Development.
7. POLICY AREA 7: High Seas Fisheries.
8. POLICY AREA 8: Cross Cutting Issues in African Fisheries and Aquaculture.

2.3.3. Reviewing Documents:

- Sudan National Fisheries and Aquaculture Policy (2012).
- Sudan National Agriculture Investment Plan (2016-2020)
- National Adaptation Programme of Action (2007)
- Sudan's Second National Communication under the United Nations Framework Convention on Climate Change (2013)
- Sudan's Third National Communication under the United Nations Framework Convention on Climate Change (2022)
- Assignment guidelines for Alignment of NAIPs and RAIPs to Climate Change and environmental management Guidelines

2.3.4. Source of figures and Photos used in this report from the consultant, and some from reports and websites.

2.3.5. National Stakeholders Consultation and Validation workshop:

National Stakeholders Consultation and Validation workshop for the review and Alignment of the national policies in the Sudan, was organized by the African Union-Inter-African Bureau for Animal Resources (AU-IBAR), in Mombasa, Kenya, from 7th to 9th April 2026. The Sudanese delegation combined 15 participants, from different expertise and specialization (annexes 4 and 5). The comments and Recommendations by participants in the three days of the workshop, added to this final draft.

CHAPTER 3: ALIGNMENT SUDAN FISHERIES AND AQUACULTURE POLICY WITH THE POLICY FRAMWORK AND REFORM STRATEGY IN AFRICA (PFRS)

3.1. Introduction:

Sudan has a potential of marine and freshwaters such as River Nile and its tributaries, and reservoirs with relatively high potential of Fisheries. In addition to different related authorities and institutes (administrative, research, academia, environmental) belong to different ministries. Sudan had developed National Fisheries and Aquaculture policy for the first time in 2012. I spite of inland fisheries law since 1937, and oyster culture on Dongunab Bay in Red Sea since 1904, fishing an ancient craft in Sudan. So, Sudan is too late in developing national fisheries and aquaculture policy. After developing the policy, the implementation up to beginning of 2026, not exceed 10%, the main constrain faced the implementation is the lack or the very weak governmental financial support, because the budget allocated for fisheries sector is not enough even for routine plans implementation.

3.2. Methodology:

* Reviewing and analyzing Sudan's National Fisheries and aquaculture policy (2012).

*Alignment Scoring: ☐Yes☐ is given unit (1) score, ☐In part☐ is assigned 0.5 and ☐No☐ is given zero (0)

* Computed percentage alignment of policy area (online questionnaire) to clarify to what extent its aligned (not aligned, weak alignment, moderate alignment, or strong alignment)

3.3. Overall Level of Alignment (Alignment scouring)

The online questionnaire was communicated through emails and WhatsApp application to 21 stakeholders from different related national institutes; those institutes are: Fisheries Administration (Marine and inland), Fisheries Research (marine and inland), Academic (Red Sea university, Bahri university, Sennar university), and ex General Director of Federal Fisheries Administration. Only 14 stakeholders were responded (annex 6), one stakeholder was apologized, and the rest 6 persons were not responded. The findings from questionnaire analysis (annex 1) shows a moderate level of alignment with the PFRS across most policy areas, including Conservation and Sustainable Fisheries and Aquaculture Resource Use (64.7%), Small-Scale Fisheries Development (58.8%), Awareness Enhancing and Human Capacity Development (57.7%), Regional and Sub-Regional Cooperation (53.6%), Cross-Cutting Issues in African Fisheries and Aquaculture (52.4%), High Seas Fisheries (52%), Sustainable Aquaculture Management (49.5%), and Responsible and Equitable Fish Trade and Marketing (49.3%).

The lowest level of alignment (42.8%) is observed in Policy Area 2B: Identification, Development and Promotion of Estuarine and Mangrove-Based Shellfisheries (EMS) among AU Member States.

The majority of the people who were filled the online questionnaire, they were haven't a knowledge about Sudan fisheries and aquaculture policy, this indicated that the policy was not well communicated and shared with the stakeholders. Their answers and replay based on the actual practices in fisheries sector in Sudan,

not from their background of Sudan fisheries and aquaculture policy. This led to more collaboration, and coordination efforts needed to update and improve Sudan national policy for fisheries and aquaculture, to be more effective by filling the gaps in the current policy, to manage the fisheries, achieve food security, improve and gain more environmental, improve livelihood and income and revenue, benefits.

3.4. The Findings of the Sudan Fisheries and Aquaculture Policy alignment with the policy and strategic framework of reform in Africa (PFRS), see annex (1).

Alignment Scoring: ☐Yes☐ is given unit (1) score, ☐In part☐ is assigned 0.5 and ☐No☐ is given zero (0). Percent averages are computed for the various policy outcomes, policy areas, as well as the entire framework

Table (4): Alignment of Sudan Fisheries and aquaculture policy with PFRS.

Policy area/ Africa	% alignment / questionnaire	Level Alignment Policy review	The Gaps identified	Comment
1.Conservation and Sustainable Fisheries and aquaculture resources use	64.7%	Moderate to strong alignment	-lack of sufficient budget allocated for fisheries and aquaculture. -lack of aquaculture development programs. -No facilities encourage investment in fisheries and aquaculture. -lack of regional collaboration in fisheries and aquaculture. -Weak contribution of applied research (poor research equipment and facilities)	- lack of political well-being, and marginality of fishing sector, make its contribution very low. - lack of good planning, and implementation. -No clear plans for labor capacity buildings, and fishing development
2.A. Small Scale Fisheries Development	58.8%	Moderate alignment	-Lack of system to organized value chain development. -No provisions for adaptation and implementation of regional and intra-regional minimum terms and conditions for access	-small scall post-harvest, and fish processing, major fish catch marketed fresh. - Fishing of Shark and Dugong banned by marine fisheries law (international guidelines for securing sustainable small-scale fisheries)
2.B. Identification, Development and Promotion of Estuarine and Mangrove-based Shellfisheries (EMS) among the AU-MS	42.8%	Weak alignment	-lack of provisions, no budget allocated for EMS conservation and development	-In Sudan Red Sea coast, there are some mangroves and shellfisheries, lay in MPA (Dongunab and Mohamed Qol)
3.Sustainable Aquaculture Management	49.5%	Moderately alignment	-Poor infrastructure -Limited aquaculture practice in fresh water (private sector), few by universities. -currently No mariculture activities (stopped), insufficient trained labor.	- Encouragement of private sector is needed. - training and capacity building, highly requested. -improvement of infrastructure, (the current war destroyed some infrastructure) - update laws and regulations very important issue.

4.Responsible and Equitable Fish Trade and Marketing	49.3%	Moderately alignment	-lack of supportive technology and infrastructure for fisheries quality control.	Sudan signed the convention on International Trade in Endangered Species (CITES) in 1982. Scientific committee
5.Regional and Sub-Regional Cooperation	53.6%	Moderately alignment	-Not effective measures is taken to IUU. -lack of tools or mechanisms to address seafood fraud. -Lack of strategies and mechanisms for preventing and resolving regional conflict.	National IUU fishing, spawning aggregation preservation and reducing by-catch plan was developed in 2025, under PERSGA regional project: Sustainable fishery development in Red Sea and Gulf of Aden (SFISH) project.
6.Awareness Enhancing and Human Capacity Development	57.7%	Highly alignment	-lack of centers of excellence of fisheries and aquaculture. - weak communication for sharing information -lack of strategy to enhance competence between fish producing communities. -uncertainty of available information.	No effective and permemant regular capacity building programs. Weak communication between decision makers and stakeholders, the evidence; Key stakeholders, do not aware about Fisheries and aquaculture policy of Sudan because it did not communicate and shared among stakeholders, Despite, they were participated in the workshop of the policy development communicated well.
7.High Seas Fisheries	52%	Moderately alignment	-Unexploited Sudan's Tuna quota in Indian Ocean. Fishing activities concentrated in territorial waters	Sudan a member of IOTC, and has a quota of Tuna in Indian Ocean, but it is not exploited
8.Cross Cutting Issues in African Fisheries and Aquaculture: A. Strengthening resilience and reducing vulnerabilities to climate change in African fisheries and aquaculture. B. Gender and youth C.private sector investments and financing mechanisms for fisheries and aquaculture in Africa	52.4% 45.5% 62.2% 49.4%	Moderately alignment Highly alignment moderate alignment	Lack of capacity building programs on climate smart fisheries. Lack of early warning system. No clear direct measures for attracting women and youth, at the same time no constrains or barriers banned women and youth the right to gain benefits from land and water Lack of provisions for awareness creation of diversity of business structure	Disaster risk management (DRM) and Climate change adaptation (CCA) policies include fisheries and aquaculture, but fisheries and aquaculture policy no include Disaster risk management and Climate Change Adaptation. To some extent the policy mentioned: performance in implementation of plans will be monitored, from which lessons will be learned and skills improved accordingly through training. Government guidelines will steer the formation of a more harmonized private sector capable of taking on responsibilities of fisheries co-management. "Sudan Fisheries and Aquaculture policy 2012, still not implemented.

Observations from the above findings:

- The relatively higher alignment in Policy Area 1 (Conservation and sustainable fisheries and aquaculture resource use) may be due to:
- The existence of Marine Protected Areas (MPAs) in the Red Sea;
- Fishing regulations (mesh size, fishing areas, and fishing seasons);
- The small-scale nature of fisheries in Sudan, which makes monitoring and control easier, with relatively limited fishing effort;
- Relatively low levels of pollution compared to regional and global water bodies.
- Policy Areas 2A (Small-scale fisheries development) and 2B (Identification, development and promotion of estuarine and mangrove-based shellfisheries (EMS) among AU Member States) also show relatively higher alignment (after Policy Area 1). This may be due to:
- Regular recording of catch data;
- Inclusion of fisheries in the National Agricultural Investment Plan (NAIP);
- The contribution of small-scale fisheries to food security, income generation, and improved livelihoods.
- Lower alignment is observed in Policy Area 2B (EMS).
- There is no clear management plan for estuarine and mangrove-based shellfisheries.

3.5. Conclusion and Recommendations:

Although fourteen years have passed since the development of the Sudan Fisheries and Aquaculture Policy (2012), it has neither been implemented nor updated. The findings of the alignment assessment show a moderate level of alignment with the PFRS across most policy areas, including Conservation and Sustainable Fisheries and Aquaculture Resource Use (64.7%), Small-Scale Fisheries Development (58.8%), Awareness Enhancing and Human Capacity Development (57.7%), Regional and Sub-Regional Cooperation (53.6%), Cross-Cutting Issues in African Fisheries and Aquaculture (52.4%), High Seas Fisheries (52%), Sustainable Aquaculture Management (49.5%), and Responsible and Equitable Fish Trade and Marketing (49.3%).

The lowest level of alignment (42.8%) is observed in Policy Area 2B: Identification, Development and Promotion of Estuarine and Mangrove-Based Shellfisheries (EMS) among AU Member States.

Key Gaps and Challenges

- Lack of sufficient budget allocation for fisheries and aquaculture, including monitoring, control and surveillance (MCS), and EMS conservation and development;
- Limited investment incentives and weak private sector engagement in the sector;
- Weak regional collaboration in fisheries and aquaculture;
- Limited contribution of applied research due to inadequate equipment and facilities;
- Lack of structured systems for value chain development;
- Poor infrastructure and limited technology for fisheries quality control;
- Limited aquaculture practices (mainly by the private sector and universities), and absence of mariculture activities;
- Weak communication, limited data availability, and inadequate monitoring systems;
- Lack of strategies to enhance collaboration among fishing communities;

- Unreliable and outdated statistical data, particularly for stock assessment;
- Challenges in governance, value chains, infrastructure, access to finance, and climate change impacts, consistent with regional trends. Recommendations
- Update the Sudan Fisheries and Aquaculture Policy to address critical gaps and incorporate regional best practices;
- Strengthen collaboration among African Union Member States to promote capacity building, knowledge sharing, and technology transfer;
- Allocate sufficient budget to the fisheries and aquaculture sector;
- Develop and implement an effective communication strategy and strengthen stakeholder engagement;
- Improve data collection systems and establish a fisheries and aquaculture database.

Expected Outcomes

- A more effective and implementable Fisheries and Aquaculture Policy;
- Increased awareness, improved skills, and enhanced socio-economic benefits;
- Increased fisheries and aquaculture production, higher incomes, and greater contribution to food security;
- Increased participation and investment in the fisheries and aquaculture sector;
- Availability of reliable data to support planning and decision-making.

CHAPTER 4 INTERNATIONAL AND REGIONAL INSTRUMENTS

The international and regional obligations, that are relevant to the fisheries sector and the National Fisheries Policy, environment and climate change.

The FAO Code of Conduct for Responsible Fisheries: The Code of Conduct for Responsible Fisheries (CCRF) is a voluntary code adopted by consensus of FAO COFI members in1995. It has strong influence on fisheries Preparation of a Fisheries Policy for Sudan – Final Technical

Project Funded by the European Union A project implemented by Pescares Italia Srl 17 administrations, policy makers and lawmakers of member states. The Code provides principles and standards applicable to the conservation, management and development of fisheries. It covers the capture, processing and the trade in fish and fish products, fishing operations, aquaculture and fisheries research.

The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is an international government agreement to ensure international trade in specimens of wild animals and plants does not threaten their survival. Wildlife Protection Administration Authority formed scientific committee of the relevant authorities in Red Sea State (Marine fisheries Administration and Red Sea Fisheries Research Station) in 2025 regarding CITIES.

The Convention on Biological Diversity (CBD): Sudan is a party to the Convention on Biological Diversity (CBD), signed in 1995, and is obliged to implement its provisions and to develop national strategies, plans or programs for the conservation and sustainable use of biological diversity. Draft Action plan and national strategy for biodiversity project updated, and implementation of the action plan, and national strategy for biodiversity development, project of Al-Dunder National Reserve, Biosafety project, in addition to establishment of a national legislative framework for biosafety. Updating of national biological diversity is ongoing.

UN Convention on the Law of the Sea: The Convention, which came into force in 1994, provides a comprehensive legal regime for the world's oceans and seas that establishes rules governing all uses of the oceans and their resources. It enshrines the notion that problems of ocean space are closely interrelated and need to be addressed as a whole.

The Ramsar Convention Sudan signed the Convention on wetlands in 2005. The Convention provides the framework for national action and international co-operation for the conservation and wise use of wetlands and their resources. Sudan has three designated Ramsar sites, two marine (Sanganeb and Dongonab-Mukawar Island) and one inland wetland (Dinder National Park) all with important fisheries habitats. Sudan formed a national committee from the relevant authorities. Limited participation in COPE and some regional events.

UN Framework Convention on Climate Change and Kyoto Protocol to the Convention The Convention on Climate Change sets an overall framework for intergovernmental efforts to tackle the challenge posed by climate change. It recognizes that the climate system is a shared resource whose stability can be affected by industrial and other emissions of carbon dioxide and other greenhouse gases. The Kyoto Protocol entered into force in 2005 and like the Convention, is also designed to assist countries to adapt to the adverse effects of climate change. It facilitates the development and deployment of techniques that help increase resilience to the impacts of climate change. Sudan developed a National Adaption Programme of Action (NAPA) in 2007 funded by the GEF via UNDP and executed by the Higher Council for Environment and Natural Resources in the Ministry of Environment and Physical Development.

Regional Convention for the Conservation of the Red Sea and Gulf of Aden, known as the Jeddah Convention, signed in 1982 PERSGA, the Regional Organization for the Conservation of the Red Sea and Gulf of Aden Environment, has its permanent headquarters in Jeddah, Saudi Arabia. It was established by the Jeddah Convention but it was not until 1995, with the signing of the Cairo Declaration during the First Council Meeting in Egypt, that the organization was formally announced. It is an intergovernmental body dedicated to the conservation of the coastal and marine environments of the Red Sea, Gulf of Aqaba, Gulf of Suez, Suez Canal, and Gulf of Aden surrounding the Socotra Archipelago and nearby waters. PERSGA's member states include: Djibouti, Egypt, Jordan, the Kingdom of Saudi Arabia, Somalia, Sudan and Yemen.

Protocol Concerning the Conservation of Biological Diversity and the Establishment of Protected Areas The protocol protects threatened species, critical habitats, sites of particular importance, as well as representative types of coastal and marine ecosystems, their biodiversity and their sustainable use and management, to ensure their long-term viability and diversity.

Protocol concerning Regional Cooperation in Combating Pollution by Oil and other Harmful Substances in the Red Sea The protocol is to protect the coastline and related interests of one or more of the Parties from the threat and effects of pollution due to oil pollution or other harmful substances in the marine environment resulting from marine emergencies.

Protocol concerning the Protection of the Marine Environment from Land-Based Activities in the Red Sea and Gulf of Aden: The protocol is designed to protect the environment of the Red Sea and Gulf of Aden against pollution resulting from land-based sources or activities and to reduce and/or eliminate such pollution to the maximum extent possible with priority given to the gradual elimination of toxic, persistent and biologically accumulating inputs.

The Nile Basin Initiative

The NBI is an inter-governmental organization established in 1999 by Ministers for water affairs in the Nile Basin countries. These Ministers comprise the governing body known as the Nile Council of Ministers. The shared Vision of NBI member States is 'to achieve sustainable socio-economic development through the equitable utilization of, and benefit from, the common Nile Basin Water Resources'. Critically important international negotiations over the sharing and utilization of Nile waters occur under the institutional

umbrella of NBI. The first "State of the River Nile Basin Report" was published by the NBI in October 2012.

The primary purpose of the report is to support informed and evidence- based decision-making in management and development leading to better stewardship of the common Nile Basin water and environmental resources. One NBI project in Sudan is the "Lake Nasser/Nubia Management Framework" which provides the overall framework for integrated Lake Nasser/Nubia basin management that guides development within the lake basin to ensure sustainable and integrated development without endangering the lake basin ecosystems.

Basel Convention on the Reduction of the Transfer of Toxic Waste (Basel 1989) The convention is concerned with regulating the transboundary movement of toxic and hazardous waste, not including atomic waste. Regulation is done by setting controls for the transport, re-export and illegal circulation of waste.

African Convention for the Conservation of Nature and Natural Resources (Algeria, 1968) This convention encourages cooperation among African countries for the protection and development of water, soil, plants, animals for present and future generations of economic, scientific and food aspects.

More details about global and regional instruments are shown table (4).

Table (5): Status of Alignment of the Sudan National Fisheries and Aquaculture Policy with the Relevant Global and regional instrument with

Instrument	Year	Sudan Status/ legal status	Sudan's Status of implementation	Comment
FAO Code of Conduct for Responsible Fisheries 1995	-	Not ratified/ Voluntary code (not legally binding)	-	It has strong influence on fisheries administrations, policy makers and lawmakers of member states. The code provides principles and standards applicable to the conservation, management and development of fisheries. It covers the capture, processing and the trade in fish products, fishing operations, aquaculture and fisheries research. Important to ratify this as it is related to other conventions
The convention on International Trade in Endangered Species of wild fauna and flora (CITES) 1973.	1982	Ratified/ binding	Implemented, Wildlife Protection Administration Authority formed scientific committee in 2025 regarding CITIES.	It is an international government agreement to ensure international trade in specimens of wild animal and plants does not threaten their survival. Partially domesticated due to inability of fisheries authority to cover the whole stretch of Red Sea coast.

The Convention on Biological Diversity 1992	1995	Party/ binding	Implemented, Sudan is a part to the Convention on Biological Diversity (CBD) and is obliged to implement its provisions and to develop national strategies, plans or programs for the conservation and sustainable use of biological diversity. Sudan participates in all international and regional meetings and conferences of the convention, in addition to attending the preparatory meetings. Sudan draft action plan and national strategy for biodiversity project update, and implementation of	Sudan developed a national biodiversity strategy and action plan (NBSAP) in 2000. The 4th National report to the convention on Biological Diversity (2009), these plans affect fisheries activities in MPAs of Red Sea, and plans concerning the protection of Dugongs, turtles, sea birds and mangrove habitat.
UN Convention on Law of the Sea 1982	1985	Party/ Into force	-	Provides a comprehensive legal regime for the world's oceans and seas that establishes rules governing all uses of the oceans and their resources. It enshrines the notion that problem of ocean space is closely interrelated and need to be addressed as a whole.
The Ramsar Convention (on wetlands) 1982	2005	Ratified/ binding	Implemented, with formation of a national committee of the relevant authorities. Wetland assessment in Sudan, and limited participation in the Conferences of the Parties COP and some regional events.	Sudan signed the Convention on wetlands in 2005. The Convention provides the framework for national action and international co-operation for the conservation and wise use of wetlands and their resources. Sudan has three designated Ramsar sites, two marine (Sanganeb and Dongonab-Mukawar Island) and one inland wetland (Dinder National Park) all with important fisheries habitats.

UN Framework Convention on Climate Chang and Kyoto Protocol to the Convention	2004	Entered into force	Implemented, and Sudan participates in all international and regional meetings and conferences of the convention, in addition to attending the meetings of intergovernmental panel on climate change (IPCC). Sudan chaired the Group 77-2009 and China, and chaired the group of African States in 2014-2015. Sudan's fulfilment of its commitment the following climate change has been supported by the GEF.	The convention on climate change. It recognized that, the climate change system is a shared resource whose stability can be affected by industrial and other emissions of carbon dioxide and other greenhouse gases. It designed to assist countries to adapt to the adverse effects of climate changes. It facilitates the development and deployment of techniques that help increase resilience to the impacts of climate change. Sudan developed a National Adaptation Programme of Action (NAPA) in 2007 funded by GEF via UNDP and executed by the Physical Development.
Regional Convention for the Conservation of the Red Sea and Gulf of Aden (Jedda Convention 1982)	1984	-	Implemented. Active participation by Higher Council for the Environment and Natural Resources (the focal point), at the technical and decision makers levels.	PERSGA, is the regional nongovernmental organization for the conservation of the Environment of Red Sea and Gulf of Aden. It established by Jeddah convention, but it was not until 1995, with signing of the Cairo Declaration, during the first council meeting in Egypt. PERSGA member states include Djibouti, Egypt, Jordan, Kingdom of Saudi Arabia, Somalia, Sudan and Yemen.
Protocol Concerning the Conservation of Biological Diversity and the Establishment of Protected Areas	1992	-	-	The protocol protects threatened species, critical habitats, sites of particular importance, as well as representative types of coastal and marine ecosystems, their biodiversity and their sustainable use and management, to ensure their long-term viability and diversity.
Protocol Concerning Protection of the Marine Environment from Land-base Activities in The Red Sea and Gulf of Aden				The protocol designed to protect the environment of the Red Sea and Gulf of Aden against pollution resulting from land-based sources or activities and to reduce and/or eliminate such pollution to the maximum extent possible with priority given to the gradual elimination of toxic, persistent and biologically accumulating inputs.
Protocol Concerning Regional Cooperation in Combating Pollution by Oil and other Harmful Substances in the Red Sea, 1982	1985	Signed	Ongoing to validate Sudan national plan, regarding the protocol. Validation workshop was held in Port Sudan, in 20th- 23th April 2026	The protocol protects the coastline of the parties from the threat and effects of pollution due to oil pollution or other harmful substances in marine environment resulting from marine emergencies. For Sudan the plan distributed to stakeholders, validation workshop in Port Sudan (6-9 April 2026)

The Nile Basin Initiative (NBI) 1999	2012			Nile Basin Initiative (NBI) is an inter-governmental organization, established in 1999 by ministers for water affairs in the Nile Basin countries. The first "State of the River Nile Basin Report□ was published by the NBI member states in 2012.
UNCLOS 2023 BBNJ (Biodiversity Beyond National Jurisdiction)	-	-	-	No available information about the Sudan status
UN IMO MARPOL 73/78		Ratified/	Partially progress	
UN Framework Convention on Climate Change/ adopted 1992	1993			
Paris Agreement 2015	2017	Official party		It is a landmark global treaty on climate change, adopted under UN Framework Convention on climate change. It aimed to limit global warming.
Indian Ocean Tuna Commission 1993 IOTC	1996	Not been actively engaged	Not implemented. Sudan not participates or attends the meetings, trainings held by IOTC	Sudan till now couldn't to exploit its quota of tuna in Indian Ocean 2000 tons/year. Sudan has a amount of contribution not paid
Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trades 1998	2005	Signed	Not mentioned if implemented or not in available official documents of Higher Council for Environment and Natural resources	Sudan signed on 17/02/2005
Port State Measures Agreement (PSMA)	2016	Ratified/ binding	-	Partially domesticated, due to lack of large fishing ports.
The UN fish stock agreement 1995	-	Not ratified	-	Important to ratify to ensure long term conservation and management of straddling stocks
Treaty banning nuclear weapon tests in the atmosphere, in outer space, and under water. Moscow: 8 May 1963	1966	signed	-	Mentioned in PERSGA documents, as Sudan sign in 1966
Bamako Convention on the Ban of the Import into Africa and the Control of Transboundary Movement and Management of Hazardous Wastes within Africa	1993	singed	-	Mentioned in PERSGA documents as Sudan sign in 1993
International Convention for the prevention of pollution from ships and its Protocols. London:1973-1978 MARPOL	2015			Mentioned in PERSGA documents as Sudan sign in 2015
Agreement to promote compliance with international conservation and management measure by fishing vessel on the high seas 1975	-	Not ratified		Should be ratified to enable potential Sudanese vessels to fish in high seas

ILO Working fishing convention 2007	-	Not ratified	-	Ratification ensures decent working conditions, safety, health and social security for potential commercial fishers.
Code of safety for fishermen and fishing vessels 1968	-	Not ratified	-	Ratification ensures safe working conditions for potential commercial fishers.
International Plan of Action to prevent, deter and eliminate IUU 2001	-	Not ratified	-	Very important to ratify for resource management
Voluntary guidelines for securing sustainable small scall fisheries FSS 2026	-	Signatory/ voluntary	-	Partially domesticated. Very important to ratify for sustainable fisheries resource management.
African Convention for the Conservation of Nature and Natural Resources (Algeria, 1968)	1973	A member in 1973	Not mentioned if implemented or not in available official documents of Higher Council for Environment and Natural resources	To encourage cooperation among African countries for the protection and development of water, soil, plants, animals for present and future generations of economic, scientific and food aspects.
International Convention for the Safety of Life at Sea 1974	1990	-	No available information about status of implementation	In Higher Council for Environment and Natural Resources reports not mentioned if the convention implemented or not
Basel Convention on Control of Transboundary Movement of Hazardous Wastes and their Disposal 1989	2006	Ratified	Activities are very limited according to HCENR reports	The convention concentrated with regulating the transboundary movement of toxic and hazardous waste, not including atomic waste. Regulation is done by setting controls for the transport, re-export and illegal circulation of waste.
Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity 2010	2014	-	No available information about status of implementation.	-
Constitution of the Center for Marketing Information and Advisory Services for Fishery Products in the Arab Region 1993	1995	Ratified	-	-
Stockholm Convention on Persistent Organic Pollutants 2001	2006	Ratified	Implemented. Persistent Organic pollutants project, conducting surveys of relevant sectors to monitor organic pollutants. Studying legislation dealing with limiting the use of these substances. Draft Strategic Approach	Sudan participates in all international and regional meetings and conferences of the Convention in addition to attending regional preparatory meetings, and participation in specialized technical reports.
International Convention on Oil pollution preparedness, Response and Cooperation 1990	2015	Ratified	-	-

*The green highlighted comments by participants in validation workshop. * (-) Unavailable information.

Focus areas and identified gaps:

1. Indian Ocean Tuna Commission: Sudan should commit and pay the contribution and be serious in exploiting its quota of Tuna (2000 ton annually. Even the private sector invests in utilization of allowed catch (2000 t/y).
2. Sudan should acceleration joining the important convention and agreement, protocols, to gain benefits, in the areas of:
    - Training and capacity buildings
    - Financial support
    - Research Support
    - Data collection, sharing information.
3. To harmonize the global and regional instruments to national laws and legislation by:
    - forming higher committee from key stakeholders to:
    - identify the gaps and find solutions to them.
    - improve institutional, governance, regulations.
    - look for financing option in addition to governmental budget, to be capable to implement plans, strategies and policies, related to fisheries and aquaculture, environment and climate change.
    - Update and reform legal framework to be more aligned with PFRS and global and regional instruments.

CHAPTER 5: NATIONAL AGRICULTURE INVESTMENT PLAN AND CLIMATE CHANGE ADAPTATION

5.1. Introduction:

The agriculture sector is the most important economic sector in the Sudan. As derived from the data records of Sudan's Central Bureau of Statistics, the sector contributed on average about 34 percent of the country's Gross Domestic Product (GDP) from 2009 to 2013. While the largest share of agricultural GDP was derived from livestock production (47 percent). The sector provides employment for about 70 percent of the country's population while providing inputs to many major food-processing industries (e.g., sorghum, millet and wheat products, edibles oils, milk products, meat products, animal feed, leather, sugar, and others). The manufacturing sector in Sudan is overwhelmingly agriculture-dependent; receiving about 60% of its needed raw material from agriculture. By virtue of its varied Agro-climatic zones, Sudan produces a wide range of crops, livestock and fish.

5.2. Sudan National Agricultural Investment Plan (SDNAIP) 2016-2020.

Sudan's National Agriculture Investment Plan (SUDNAIP) is a five-year investment plan, which maps the investments needed to achieve the Sudan Comprehensive Africa Agriculture Development Programme (CAADP) The year 2003 witnessed the signing, by African Heads of State and Government, of the Maputo Declaration, which launched the Comprehensive Africa Agriculture Development Programme (CAADP) as a NEPAD vision for restoration of growth, food security and rural development in Africa.

The main goal of the CAADP is to help African countries reach a higher path of economic growth through agriculturally-led development which eliminates hunger, reduces poverty and food insecurity, and enables expansion of exports target of six percent annual growth in Agriculture Domestic Product (GDP). The Sudan will pursue this target through allocating a minimum ten percent of its budget to the agricultural sector. The Sudan also seeks the support of the international community and the private sector in bridging the funding gap between the funding requirements and the amount that has already been identified from a variety of domestic, international, public and private sources.

5.3. The objectives of the SDNAIP are:

- Promotion of exports of crops and livestock with a view to safeguarding against the risks of collapse of the whole economy as a result of neglect of the agricultural sector and distortions to agricultural incentives.
- Increasing productivity and efficiency at the production and processing stages.
- Realization of food security and nutrition.
- Reducing rural poverty by 50percent by 2020, generation of job opportunities, especially for youth and women, and increasing per capita income.
- Achievement of a regionally balanced sector and economic growth in order to encourage settlement in the rural areas.
- Development and protection of natural resources to ensure its renewal and sustainability.

5.4. INVESTMENT PROGRAMME AREAS (IPAs)

IPA1: Enabling Environment for Sustainable Agricultural Development.

IPA2: Institutional Reform, Change Management and Enhanced Capacity Building of Producers and Staff in the Agricultural Sector.

IPA3: Increasing Agricultural Production and Productivity through Development and Modernization of Agricultural Systems and Improved Agricultural Management.

IPA4: Development of Agricultural Support Services and Establishment of Knowledge and Information Network.

IPA5: Agricultural Industrialization, Development of Value Chain and Market Access.

A third component is construction and development of strategically placed markets (livestock and livestock products, field crops, horticulture, fish, etc.), and the fourth is rehabilitation of the strategic railway sector (from east to west border). The fifth Selected value chains For Fisheries in Red Sea, Northern, White Nile

IPA6: Addressing the Issues of Agricultural Land, Protecting and Developing Natural Resources including Wildlife.

The Programme comprises 7 sub programs, Programme 1The first sub-Programme aims at reforming the land tenure to encourage agricultural investment.

Programme 7

This investment area conforms to CAADP pillar 1 which aims to extend the area under sustainable land management and reliable water control systems while contributing to CAADP

Pillar 3: increasing food supply, reducing hunger, and improving responses to food emergency crises. The main objectives of the programme are the development and protection of natural resources to ensure their renewal and sustainability. Appropriate use of natural resources would enhance productivity and profitability in the agricultural sector as well as conserve the environment, improve livelihood, increase food security and nutrition and reduced poverty of the population depending on these resources.

5.5. SUDNAIP Costs and Financing: It is estimated that the achievement of 6 percent annual

- growth of sectoral GDP will require investments of around US$ 5.542 billion over the next
- five-year period (2016-2020) to be financed by the Government, development partners,
- private sector and other players.

Table (6): Summary Alignment of Sudan NAIP to Policy areas PFRS

Policy area/ Africa	Sudan NAIP Areas (IPA)	Level Alignment to PFRS	Comment
1.Conservation and Sustainable Resource Use: Outcome	**IPA1**: Enabling Environment for Sustainable Agricultural Development	moderately aligned	As IPA Fisheries included
2.A. Small-Scall Fisheries Development. Outcome 1.4. Small scale fisheries prioritized in National Agriculture Investment plans (NAIPs)	**IPA2**: Institutional Reform, Change Management and Enhanced Capacity Building of Producers and Staff in the Agricultural Sector.	Partially aligned	Fisheries mentioned in (NAIP) in IPA 3. Construction and developed of strategically placed market (livestock, livestock products, field crops, horticulture, fish). and mentioned in value chains (fisheries in Red Sea, Northern, White Nile)
2.B.Identification, Development and Promotion of Estuarine and Mangrove-based Shellfisheries	**IPA3**: Increasing Agricultural Production and Productivity through Development and Modernization of Agricultural Systems and Improved Agricultural Management.	Not aligned	In NAIP not mentioned ecosystem of fish habitats, mentioned fisheries generally
3.Sustainable Aquaculture Management	**IPA4**: Development of Agricultural Support Services and Establishment of Knowledge and Information Network.	Not aligned	
4.Responsible and Equitable Fish Trade and Marketing	**IPA5**: Agricultural Industrialization, Development of Value Chain and Market Access.	Moderately aligned	Fisheries mentioned in this in this investment area "*construction and development of strategically placed market (livestock, and livestock products, field crops, horticulture, fish)* ☐
5.Regional and Sub-Regional Cooperation	**IPA6**: Addressing the Issues of Agricultural Land, Protecting and Developing Natural Resources including Wild Life.	Not aligned	
6.Awareness Enhancing and Human Capacity Development		highly aligned	
7.High Seas Fisheries		Not aligned	
8.Cross Cutting Issues in African Fisheries and Aquaculture		Moderately aligned	NAIP mentioned gender and youth Also, private sector investment and financing mechanisms

Table (7): Matrix SWOT Analysis for Sudan NAIP

Strengths	**Weaknesses**
• - Although about one quarter of the area of the Sudan went to South, Sudan after secession, is still one of the largest countries in Africa, with a: • total area of 1.86 million square kilometers, ranking third in Africa after Algeria and • the Democratic Republic of Congo. The Sudan is bestowed with extensive lands suitable for agricultural cultivation, estimated at 175 million feddans (74 million hectares), out of which only 45 million feddans (19 million hectares) are currently under cultivation, representing only 25percentutilization of the area suitable for • agricultural production. • Water resources from rainfall, rivers and underground aquifers are sufficient to meet • the requirements of the country's livestock numbers, fishery requirements. • The cultivation of different crops and available for increasing the areas under forests and • pasture. • A large animal resource base (104 million heads) as well as a sizable reservoir of • fish resources along the Red Sea shores, Lake Nuba and Merawi reservoir is under-utilized. • A strategic geographical location which is positioned to support increased marketing • of agricultural and livestock commodities in the regional and international markets. • Commitment and a political will for equitable and sustainable socio-economic development. • The existence of the federal system of government which encourages the participation of local communities in national development programmes. • Concerted efforts to improve the infrastructure which is necessary to promote agricultural marketing and exports. • Available faculties of agriculture, veterinary sciences, animal production, forestry and fisheries all over the country which can provide trained manpower in all areas • of specialization required by SUDNAIP.	• Fragmentation of agricultural land ownership and failure to apply modern agricultural technology. • Weak infrastructure, which directly affects productivity, storage, marketing, and export. • Poor financing mechanism and difficulty in obtaining agricultural financing. • Low productivity resulting from the use of traditional farming methods and failure to adopt modern technologies. • Limited expansion services and weak capacity building programs for farmers. • Weak agricultural research and inadequate linkage between research institutes and farmers. • Insufficient investment in the agricultural sector. • Weak value chains and poor integration between production, proceeding, and marketing. • Limited use of modern irrigation techniques. • Weak agricultural policies and limited effectiveness of implanted strategies. • Limited role of the private sector and weak partnerships between public and private sectors in the agricultural field. • Poor utilization of available agricultural resources. • Limited application of quality standards and modern post-harvest practices.
Opportunities	**Threats**
• Availability of vast arable lands and abundant water resources. • Large and diverse agricultural production potential across different regions of Sudan. • Strategic geographical location of Sudan linking Arab and African countries and proximity to major markets. • Growing regional and international demand for agricultural products.	• Climate change and its impact on rainfall patterns and agricultural productivity. • Land degradation and desertification • Political and economic instability. • Weak infrastructure and high production costs. • Over 85% of agricultural activities depend on rainfall, making production vulnerable to climate variability. • Rapid population growth leading to increased pressure on natural resources. • Trade barriers and difficulties accessing international markets. • Conflicts over land and water resources.

5.6. General observations:

Sudan NAIP not highly concerned with fisheries (not high priority). Fisheries mentioned although NAIP Document, only about 7 times:

1. Fisheries (member in Steering committee)
2. Fishing household (Beneficiaries)
3. Fish (value chain)
4. 3rd component is construction and development of strategically placed market (livestock, livestock products, field crops, horticulture, fish).
5. IPA3: Increasing Agricultural Production and Productivity through Development and Modernization of Agricultural Systems and Improved Agricultural Management.
6. Value Chain Fisheries (Red Sea, Northern, White Nile).
7. IPA6: Addressing the Issues of Agricultural Land, Protecting and Developing Natural Resources including Wildlife. The Programme comprises 7 sub programs, Programme 1The first sub-Programme aims at reforming the land tenure to encourage agricultural investment. Programme 7This investment area conforms to CAADP pillar 1 which aims to extend the area under sustainable land management and reliable water control systems while contributing to CAADP

Sudan National Agriculture Investment plan (2016 -2020) not updated.

The main constrains represented in:

- insufficient Funding (financial issue).
- climate change (drought, desertification, rainfall)
- Land conflict.

Sudan NAIP Need to give fisheries wider space in its programs, as an important sector contributing to food security, employment.

5.7. Conclusion and Recommendation:

Sudan has significant agricultural potential, with vast arable land and natural resources. However, this potential remains largely underutilized. The Sudan National Agricultural Investment Plan (2016–2020) has not been updated, and fisheries remain insufficiently integrated despite their importance for food security and employment. Limited funding, climate change impacts, and land-related conflicts remain major constraints. Strengthening the role of fisheries within agricultural planning frameworks is essential.

Recommendations:

- Prioritize productive sectors, including fisheries and agriculture, in national development planning;
- Strengthen governance and management systems;
- Increase budget allocation to agriculture and fisheries sectors;
- Promote sustainable practices, including climate-smart and green technologies;
- Encourage partnerships between small producers and the private sector, supported by financial and technical assistance.

CHAPTER 6: CLIMATE CHANGE ADAPTATION

6.1. Introduction to Climate Change:

Climate change mitigation and adaptation remain one of the most critical challenges facing the world.

The African Union's African Continental Free Trade Area (ACFTA) Futures Report provides sobering forecasts on effects of climate change on the continent's economy. The report provides information that in a high warming scenario estimate, "the Sudan and United Republic of Tanzania, would both lose an estimated 18.6 percent of their GDP by 2050. Guinea-Bissau, Liberia and Mauritania would all lose more than 16 percent of GDP by that point. Niger could lose as much as 19.8 percent of its GDP. Sudan is already experiencing the impacts of climate change. Over the past three decades, climate changes have led to crop failures in traditional rain-fed farming, the backbone of the Sudanese economy. It has also led to severe impacts to pastoralist activities such as the deterioration of natural rangelands, an increase in seasonal fires, overgrazing in communal lands, and livestock deaths. Such impacts are deepening already profound poverty levels across rural communities in Sudan. The Higher Council for Environment and Natural Resources (under the Council of Ministers) is the national competent authority responsible for climate change; here are some documents such as summarized in table (8) below: -

Table (8): Documents Related to Climate Change in the Sudan

Program/ Plan/ Report/ other	Comment
Sudan☐ s First Biennial update Report 2022	In fulfilment of its obligations as a Non-Annex I signatory Party to the United National Framework Convention on Climate Change (UNFCCC)
Sudan☐ s Third National Communication under the United Nations Framework Convention on Climate Change 2022	
First Nationally Determined Contribution under the Paris Agreement update 2021	updated by Higher Council for Environment and Natural Resources (HCENR) in October 2021. First Nationally Determined Contribution Under the Paris Agreement was the **adaptation priority** for coastal zone vulnerable zone is "Building resilience in coastal zone. **The goal**: is to reduce vulnerability of coastal communities to climate change impacts on their livelihoods.
National Adaptation Plan 2014	Sudan's National Adaptation Plan in response to the 2010 Cancun Agreement under the UNFCCC. The Plan responds to the overall objectives of the UNFCCC's National Adaptation Plan Guidelines for reducing vulnerability to the impacts of climate change through the building of local adaptive capacity and resilience and facilitating the integration of climate change adaptation into relevant new and existing policies, programs and activities. The plan includes Fisheries sector, and climatic factors has impacts and can affect fisheries and (Temperature increase and low rain fall). The adaptation action; is Rehabilitation of mangrove and coral reefs, marine environment monitoring, mangrove reseeding, and coral reef reseeding, monitoring station, and commercial fish/ stock assessment
Sudan☐ s Second National Communication under the United Nations Framework Convention on Climate Change 2013.	Sudan's Second National Communication under the United Nation Framework Convention on Climate Change. As signatory to the UNFCCC and its Kyoto Protocol, Sudan has implemented various policies and measures to fulfill Sudan's commitments as a non-Annex I Party to the convention. Sudan also actively participates in international cooperation and regional climate change initiatives.

National Adaptation Programme of Action 2007	As a Least Developed Country and an active Party to the United Nations Framework Convention on Climate Change. The overall goal of the NAPA process in Sudan has been to identify urgent and immediate activities to address climate variability and climate change within the context of the country's economic development priorities.
Sudan' s First National Communication under the United Nations Framework Convention on Climate Change 2003	Sudan has both ratified the Framework Convention, signifying its commitment to the global environment and principals of sustainable development, and has been an active participant in negotiations at the Conference of Parties. It is in this spirit, that Sudan is submitting this first National Communication.

6.2. Alignment of NAIPs and RAIPs to climate change:

Sudan has a National Adaptation Programme of Action 2007, and National Adaptation Plan 2014, developed by the higher council for Environment and Natural Resources.

Sudan has National Fisheries and Aquaculture policy 2012, Fisheries Directorate/ Ministry of Animal Resources and Fisheries.

Sudan has National three National Communications under the United Nations Framework Convention on Climate Change, 2003, 2013, 2022 respectively, were developed by the Higher Council for Environment and Natural Resources.

Sudan has National Agricultural Investment Plan 2014-2020/ Ministry of Agriculture.

Table (9): National Climate Change Adaptation plan describes and qualify risk

	Climate-change vulnerabilities and risks	**Anticipated Risks**	**Proposed mitigation measures**
Overall/generally for the country	High	Increase drought, led to crop failure, water shortage. Rainfall patterns	Develop and expand climate-smart irrigation systems, promote drought-resistant and tolerant crop varieties. Establish early warning systems for extreme weather
Aquatic ecosystems	High	Temperature rise, sea level increase, coral reef bleaching, ecosystems degradations, reducing fish production	Monitoring of sea temperature, sea level. Promote adaptive fisheries management measures
Fisheries and aquaculture	High	Temperature rise, reducing yields, fish stocks	Monitoring sea temperature and fish movement. Promote adaptive aquaculture management measures

What does the National Fisheries and Aquaculture Development Policies/Plan say about climate change? Can include other relevant documents/policies that influence fisheries and aquaculture development in your country

Table (10) National Fisheries and aquaculture policy and climate change

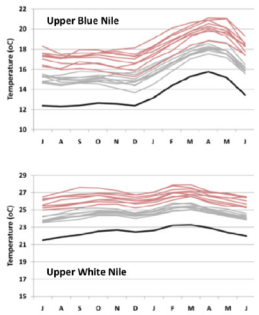
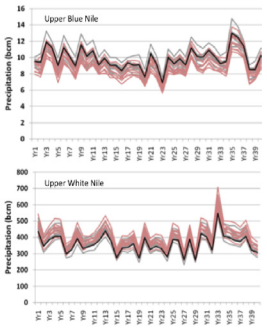
Name and Reference of Document	**Quote what document states on climate change in the sector** *(e.g. nothing, only mentions 'climate change under sections…., page#)*	**Remarks if any**
Sudan Update First Nationally Determined Contribution, under Paris Agreement (2021), Higher Council for Environment and Natural Resources	Introduction, Coastal zone Pages (4), Sudan Adaptation priority page (22)	
Sudan's Second National Communication under the United Nations Framework Convention on Climate Change (2013), Higher Council for Environment and Natural Resources.	Pages (44 - 50):Vulnerability of water resources Pages (50 - 60) Coastal Zone vulnerability and adaptation	Chapter 3: Vulnerability and Adaptation
Sudan Fisheries and Aquaculture Sector Review (2018)	Nothing about climate change mentioned	
Sudan National fisheries and aquaculture policy (2012)	Nothing about climate change mentioned	

Note: Sudan Fisheries policy does not mention climate change.

May you elaborate the climate change risks and impacts identified in the documents above for the fisheries and aquaculture in the table below: (please specify whether referring to freshwater/marine aquatic environment)

Table (11) climate change risks and impact

Drivers	**Biophysical Impacts**	**Implications**	**Proposed Risk Mitigation Measures**
Changes surface water temperature	Warm water means less Oxygen led to disturbing fish. coral reef bleaching, coral systems low adaptive thermal adaptation.	Decline fish stocks, and loss of biodiversity, reef degradation, and increased CO_2 concentration in sea surface which can led to Red Sea acidification	Increased carbon sequestration by blue carbon systems. Monitoring of sea temperature. - Develop a set of leading indicators of specific climate change impacts in the coastal environment and observe/record changes for those indicators
El Niño-Southern Oscillation	- 25% of the natural variability in the annual flow of the Nile is associated with El Niño oscillations. https://doi.org/10.1029/95WR02968 - The El Niño Southern Oscillation (ENSO) phenomenon contributes significantly to seasonal climate fluctuations in Sudan. El Niña associated with heavy rainfall over Sudan. While normal to below normal rainfall associated with El Niño phenomena. During the Neutral phase of ENSO extreme event are likely to take place during the rainy season. This can be wet or dry conditions (Sudan's Third National Communication Under the United Nations Framework Convention on Climate Change, 2022).	Nile flood, due to heavy rains.	

Rising sea level	Alteration of growth rate of mangrove, affecting sea grass ecosystems, and affecting islands.	Affecting coastal communities, especially those who depend on mangroves, and who live in or near islands	-Mapping, demarcation of coastal hazard lines subjected to sea level rise and over flooding. -Protection of coral reef and, sea grass beds and restoration of degraded areas and areas especially sensitive to climate related risks; - Monitoring sea level. - Develop a set of leading indicators of specific climate change impacts in the coastal environment and observe/record changes for those indicators
Higher inland water temperatures 	warmer conditions in the future over both the Upper Blue Nile Basin and White Nile Basin. As can be seen in the Figure, monthly temperatures are projected to warm considerably throughout the 21st century in the region. In the watershed of the Upper Blue Nile, monthly temperatures are expected to rise between 1.5°C and 3.0°C by 2050 and roughly between 2.9°C and 5.8°C by 2090. In the Upper White Nile watershed, changes are similar; monthly temperatures are expected to rise between 1.0°C and 2.8°C by 2050 and roughly between 3.5°C and 4.5°C by 2090. (source: Sudan's Second National Communication Under the UN Framework Convention on Climate Change,2013).	increased evapo-transpiration over water storage areas that could lead to lower flows in the River Nile.	Establish early warning systems for extreme weather
Changes in precipitation and water availability 	Annual rainfall for the baseline and indicated, 2050 and 2090, for the Upper Blue forecasted periods in the Upper Nile regions Nile Basin (top chart) and the Equatorial region of the White Nile Basin (bottom chart). The baseline annual rainfall profile is indicated by the black lines. Rainfall projections for the 2050 period are shown by gray lines and the projections for 2090 are shown as red lines. As can be seen in the Figure, there is a tendency for drier conditions over the Upper Blue Nile Basin and wetter conditions over the White Nile Basin	There is a tendency for drier conditions over the Upper Blue Nile Basin and wetter conditions over the White Nile Basin	Establish early warning systems for extreme weather

Increase in frequency and/or intensity of storms	The Red Sea area itself is not currently an area of cyclone activity and is not recognized as a region currently vulnerable to cyclone activity. High current, strong wind affecting fisheries, and fishermen communities	-Damage to infrastructure in fisheries and aquaculture, affecting livelihood of fisher communities -Recent GIS studies suggest that Sudan will experience roughly a 20% increase in its current storm surge zones.	Establish early warning systems for extreme weather
Drought	Affecting agriculture, livestock, water resources and health, even fisheries (lung fishes which lives in the mud)	Loss of crops and livestock (food shortage), decline in the hydroelectric power, displacement of wildlife, and some fishes	Establish early warning systems for extreme weather

Table (12): Livestock vulnerability assessment results

Parameter	Indicator	Rating
Exposure	• Increased pressures for the use of shrinking grazing land resources among competing pastoral communities • Reductions in the spatial extent of traditional animal grazing routes	High
Sensitivity	• Dependence on annual livestock exports to regional trading partners • few to no viable alternatives to selling livestock	High
Climatic Impact	• Increased morbidity and mortality risks of all livestock herds • Decline in suitable pasture areas for domestic cattle breeds	High
Adaptive capacity	• High economic insecurity among pastoral communities • Inadequate knowledge and knowledge transfer processes	Low
	Overall livestock vulnerability rating	High

Source: Sudan's Third communication under UN Framework convention on climate change (2022)

Table (13): Agricultural vulnerability assessment results

Parameter	Indicator	Rating
Exposure	• Number of farming households affected by declining crop yields; • Timing and seasonality of exposure to climate these for sorghum, millet, and sesame	High
Sensitivity	• Inherent sensitivity to shifting rainfall trends in terms of their annual amounts and seasonal fluctuations	High
Climatic Impact	• Decrease in historical crop yields for millet, sorghum, and sesame due to climate variability; • Decline in productivity of mechanized and non-mechanized, rain- fed systems for millet and sorghum production	High

Adaptive capacity	• Weak drought contingency planning for ensuring food reserves in the face of drought; • Low institutional capacity to address urgent adaptation needs • Limitations in farmer participation in on farm food security research; • Low community engagement in climate change awareness- raising; • Limited small farmer access to financing	Low
Overall agricultural vulnerability rating		High

Table (14) SWOT analysis of the NAIP on issues pertaining to climate change and environmental management and related policies for the fisheries and aquaculture NAIPs

Strengths • Vast fertile lands. • Availability of manpower • Availability of Research and institutes • varieties in climate and crops, livestock and fisheries • Capability of joined integrated enterprises (Rice and fish farm)	**Weaknesses** • Sudan NAIP not updated. • Fisheries and aquaculture not widely covered. • weak institutional capacity building • Lack of using technologies • lack of equipment and facilities for research purposes
Opportunities • private sector engagement • increase participation of stakeholders and local community. • increase collaboration and coordination to share knowledge and raise awareness.	**Threats** • Climate change • Insufficient budget. • Conflicts. • instability of political condition

6.3. Conclusion and Recommendation:

6.3.1. Conclusion:

Sudan is highly vulnerable to the impacts of climate change. This vulnerability is most acute in the country's arid and semi-arid dryland areas, which are home to about 70% of the population.

Despite the significant impacts of climate change on ecosystems, biodiversity, and socio-economic conditions, and despite Sudan's participation in global climate change frameworks, there is limited data and information on research or studies related to climate change impacts, as well as on adaptation and mitigation measures.

Key gaps identified include:

- Limited reliable data on climate change and its impacts, particularly on fisheries and aquaculture;
- Weak Monitoring, Control and Surveillance (MCS) systems.

6.3.2. Recommendations:

- Strengthen capacity building in climate change adaptation for the fisheries and aquaculture sector;
- Develop and establish a database, accessible to researchers, students, and decision-makers;
- Promote community participation;
- Support research and studies on climate change impacts and adaptation.

Good Practices:

- Efforts underway in Sudan to promote climate change education, undertake climate-related research, develop systems and processes for networking and information sharing, and facilitate technology transfer. Additional details are available in the report on these issues by the national team (Sudan national team, 2021).

Climate Change Education, Training and Public Awareness

Formal education and training in climate change encompass education at both the primary and higher levels, as well as training programs conducted for students, stakeholders and specific target group of professional. Key Informant Interviews (KII) and Focus Group Discussions (FGD) were conducted to identify and select the institutions, governmental, non- governmental, training, and research centers relevant to climate change in Sudan to identify and evaluate educational activities on climate change.

The spatial coverage was national; institutions and individuals representing all of Sudan's 18 states were involved. Based on the information obtained, there are 31 government universities and 14 Private universities, and 5 research centers engaged in education and training relevant to climate change in Sudan affiliated with the Ministry of Higher Education. There are also other research centers (i.e., Agriculture Research Corporation, Animal Resources Research Corporation, Hydraulic Research Center, Industrial Research, and the Consultancy Center) that are affiliated with other ministries. Most are located within Khartoum State (see Figure 5-1, left).

Table (15): Range of research, graduate courses, and training related to climate change at formal educational institutions in Sudan

Institution	Research	Graduate courses	Training activities
Agricultural Research Corporation (ARC)	Agricultural Adaptation best practices and modelling	Crop and range management modelling (Aqacrop, Grange)	Agriculture and Modeling
Institute of Environmental Studies	Forestry and Gum Arabic research	Climate change, desertification, water resources	Forestry
National Centre Remote Sensing Authority	Remote sensing and GIS Applications in the Environment	Remote sensing and geographic information systems	Remote sensing and GIS
National Research Center	Reforestation program in an arid area	Environmental Studies	Reforestation
Sudan University	None	Environmental Forestry	None
University of Alfashir	None	Climate change and Climate measurement devices	Rebuilding Darfur
University of Gedarif	Natural forest degradation	Environmental Forestry	None
University of Khartoum	None	Remote sensing and climate	None
		Climate change,	
University of Khartoum (Training Unit)	None	desertification, water resource, and vegetation cover	Climate change training courses
University of Kordofan	Climate change adaptation	Gum Arabic and desertification	Training

University of Red Sea	Mangrove mapping and assessment	Mangrove ecosystems	None
University of Sennar	None	Environmental Studies	None

Best practice in Sudan regarding Fisheries

Ecosystem approach to Fisheries management (EAFM):

This is one of the outcomes of UNIDO project (2014-2023): Institutional capacity building for the national counterparts: Marine fisheries Administration, Red Sea Fisheries Research Station, and the Faculty of Marine Science and Fisheries. In this component of the project Ecosystem Approach to Fisheries management a large number of different levels in Red Sea State (Academia, Researchers, fish inspectors, discission makers, fishers, fish traders, women, NGOs, navy, etc,.), in coastal localities along Sudan Red Sea Coast (Port Sudan, Suakin, Agig, Dongonab, Mohamed qoul, Oseif), were engaged and trained. Finally national plan to implement EAFM had been developed, by the national EAFM team with the technical support from IMA International Experts via UNIDO□s project which financed by Norwegian Embassy.



Fig. (10): Participants from Dongunab and Mohamed Qol World Heritage Site in EAFM Workshop

National Plan of Actions- Illegal Unregulated Unreported Fishing (NPOA-IUU Fishing)

This national plan and regional plan of Action-IUU PERSGA, is one of the main outcomes from the regional project: Sustainable Fisheries Development in Red Sea and Gulf of Aden (2023-2025). The project implemented in PERSGA region, the seven parties: Djibouti, Egypt, Jordon, Saudi Arabia, Somalia, Sudan and Yemen.



Fig (11) PERSGA Regional meeting in Jeddah (SFISH project)

UNESCO Project: ongoing project in Sudan Red Sea, Financed by Italy. The project aims to develop fisheries in Sudan Red Sea through education gate, by creation and development curricula related to fisheries, in Industrial higher secondary school in port Sudan, to raise capacity buildings. The project is engaging stakeholders from Marine Fisheries Administration, Red Sea Fisheries Research Station, Faculty of Marine Sciences and Fisheries, Fishers association, Ministry of Education.

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ANNEXES

ANNEX 1: FRAMEWORK TO AID IN THE REVIEW OF SUDAN FISHERIES AND AQUACULTURE POLICIES AND LAWS USING THE PFRS, REGIONAL INSTRUMENTS AND GLOBAL BEST PRACTICES AS BENCHMARKS

Documents Used in the development of the Framework:

Documents Perused:

Overall Level of Alignment:

Computed Alignment of Policy Areas:

POLICY AREA 1: Conservation and Sustainable Fisheries and Aquaculture Resource Use: -

POLICY AREA 2A: Small Scale Fisheries Development: -

POLICY AREA 2B: Identification, Development and Promotion of Estuarine and Mangrove-based Shellfisheries (EMS) among the AU-MS: -

POLICY AREA 3: Sustainable Aquaculture Management: -

POLICY AREA 4: Responsible and Equitable Fish Trade and Marketing: -

POLICY AREA 5: Regional and Sub-Regional Cooperation: -

POLICY AREA 6: Awareness Enhancing and Human Capacity Development: -

POLICY AREA 7: High Seas Fisheries: -

POLICY AREA 8: Cross Cutting Issues in African Fisheries and Aquaculture: -

Alignment Scoring:

Note: Alignment Scoring, a 'Yes' is given unit (1) score, 'In part' is assigned 0.5 and 'No' is given zero (0). Percent averages are computed for the various policy outcomes, policy areas, as well as the entire framework (%) value indicated the calculated value which represents overview of online questionnaire.

(X) indicated the analysis evaluation, and group discussion during validation workshop (if Yes or Partially or not aligned).

POLICY AREA 1: CONSERVATION AND SUSTAINABLE FISHERIES AND AQUACULTURE RESOURCE USE					
Criteria for Alignment YES	Check **X** to Indicate if:			Level of Align-ment (%)	. Comment and reference
	IN PART	**NO**	64.7%		
Outcome 1: **Policies, frameworks and tools in place to sustainably increase national benefits from fisheries and aquaculture**				72.6%	

1	***Fisheries and aquaculture are mainstreamed into national development***					The allocated budget for fisheries sector does not sufficient, and does not constant, now the budget of the country is an emergency budget due to the current conflict. Allocation of insufficient budget to the fisheries administration offices to undertake regulations of fishing, to raise awareness through extension in capture fisheries and aquaculture, to enable covering remote fisheries areas for monitoring. Not enough funds allocated for fisheries and aquaculture development. Generally, aquaculture in inland water is better than mariculture, and it need to be advanced. Limited potentially market-oriented species are considered. Allocation of sufficient budget for research on potentially cultivable species, and to assist in evidence-based decision-making through research and surveys in capture fisheries. Limited potentially market-oriented species are considered. Wide gab technology. Private sector is not attracted as policies lack incentives. Lack of institutional and human capacity.
	a. Member States should increase allocation of national budgets to fisheries and aquaculture	X			88.5%	
	b. The aquaculture development programme should focus on areas where market-led aquaculture investments and developments are underway and accelerated rates of aquaculture production are being achieved, or great potentials exist?	X			80.8%	
	c. The state should focus on strengthening the private and public sectors' capacity to develop comprehensive and realistic strategic plans and their implementation in the short to medium term?		X		76.9%	
	d. The State must encourage the development, expansion or introduction of new and proven production techniques			X	85.7%	
	At regional level:		X		63.6%	
	a. harmonize policy, institutional, legal, regulatory, and monitoring regimes to govern aquaculture operations that occur in waters that go beyond national jurisdiction		X		81.8%	Fishing sector offers limited extension services, and there are limits of using technologies. No elaborate mechanism exists for regional support and harmonization of activities
	b. endorse and apply standards and norms on aquatic animal health: fish disease, safety, quality and traceability		X		45.8%	
	c. implement quarantine measures for the introduction of exotic and genetically modified genomes		X		66.7%	Till now aquaculture in Sudan is very limited in areas and in the use of advanced methods in inland waters, currently no mariculture practices in Red Sea for 17 years ago. Production is based on extensive rather than intensive techniques. Water quality controlled, the standards and quality, only used for exported fish (health certificate is requested from official authorities as Standards and metrology, and health lab. Wide variation and disparity in practices among regional states.
	d. elaborate mechanisms to support and harmonise the activities of regional aquaculture and capture fisheries bodies					Regionally, PERSGA implemented some project regarding fisheries and environmental issues, and there is reginal oil pollution regional center in Egypt. but no elaboration mechanism exists for regional support and harmonization of activities, regarding fisheries except Tuna in Indian Ocean (not activated)
2	*Globally accepted best practices integrated into national policy frameworks and tools*					The policy concentrated on developing fishing and aquaculture sector using domestic capabilities and facilities, so the update of the current (unimplemented) policy is highly requested. To some extent, the policy aimed to eradicate illegal fisheries practices, implement local fisheries management plan. Improve fish quality and increase added value
	1. Does the policy promote globally accepted best practices and pursuing excellence in fisheries science and integrated evaluations?		X		72.7%	
	2. Does it promote effective management, improved product processing, utilization and technology transfer?		X		62.5%	

3	*Are policy and management decisions made based on the existence of reliable data and information management systems?*		X		88.5%	policy and management decisions made based on the existence data (but not 100% reliable) Data is usually fragmentary and is of questionable reliability. One of the policy objectives is to develop national systems for information and data collection, transfer, storage analysis and reporting (mentioned in objectives of pillar 1) of the policy.
4	*Adoption of participatory fisheries management mechanisms/approaches*		X		59.1%	Existing management mechanisms are mostly top-to-bottom approach with limited participation of stakeholders.
Outcome 2: **Effective and sustainable national and regional Monitoring, Control and Surveillance systems in place to ensure that sustainable benefits are realized**					61.3%	.
1	*Are there aspects of MCS in place?*		X		57.1%	There is no active and effective mechanism for regional cooperation on fisheries MCS. But in the aspect like capacity building with PERSGA. Capacity to cover the expansive fisheries is lacking in terms of human and financial resources.
2	*Are there mechanisms in place for efficient and effective regional cooperation on fisheries MCS?*		X		65.4%	There is a need to develop mechanisms to enhance cooperation with Eretria and South Sudan, who are not covered by existing mechanism. Also, inland waters lack provision for cooperation at regional levels (with South Sudan and Egypt).
Outcome 3: **Healthy ecosystems to support sustainable fisheries and aquaculture**					38.1%	
1	*Are Scientific research (natural, social, economic and technological) that support fisheries management and aquaculture development in place?*		X		70.8%	Not so far, to some extent, some research outcomes supportive to fisheries management. Shortage of human and financial resources.
2	*(a) Are there tools and programmes in place to protect fishery resources and their habitats?* *(b) Are there measures to adhere to national, regional and international pollution instruments, standards and practices, especially regarding chemical products and plastics?*	X		X	69.2% 40.9%	There are marine protected areas, there are measures exists in fisheries laws, and by-laws regarding fishing gears, fishing seasons and fishing areas. Measures exist but not fully applied. There is a protocol with PERSGA underway for validation. Nationally the Sea Port Corporation (Safety and environment Department) has measures for oil and chemical pollution. Fragmentary

POLICY AREA 2A: SMALL SCALE FISHERIES DEVELOPMENT						
Criteria for Alignment **YES**		Check **X** to Indicate if:			Level of Alignment (%)	Comment and Reference
		IN PART	**NO**	58.8%		
Outcome 1: **Role and importance (contribution) of fisheries for improved livelihoods, food and income of small-scale fishing communities and related operators are evident, recognized and secured in Member States**					57.7%	
1	*Are there mechanisms and strategies that highlight the economic and social importance of small-scale fisheries development?*		X		76.9%	**Pillar No.5** in Sudan national Fisheries and aquaculture policy: the integration of fisheries into future national economy driven by revitalized agricultural development requires a business development approach to be adopted by government and private sector stakeholders alike.

2	*Are there mechanisms and strategies to unlock and unleash potentials of the subsector to generate socio-economic benefits?*		X		50%	Pillar No.3 in Sudan national Fisheries and aquaculture policy: Unleashing the potential of aquaculture. The government is committed to providing a more enabling and supportive environment to larger-scale commercial aquaculture linked to modern fish quality assurance and marketing systems.
3	*Is there a system to facilitate organized value chain development in order to effectively derive the benefits from small-scale fisheries?*		X		50%	Pillar 5 Sudan national Fisheries and aquaculture policy: A major thrust will be in securing improved fish quality and value addition linked
4	*Are small Scale Fisheries prioritized in National Agricultural Investment Plans (NAIP), Poverty alleviation documents and National strategy documents, etc.?*		X		53.8%	Mentioned in agricultural investment plan (2015), as a general goal, under program 5: Agro-processing, value chain development, and marketing, expanding access to domestic and export markets
Outcome 2: **Bilateral and regional cooperation for effective management of shared fishery resources and ecosystems is strengthened**					50%	
1	*Are there provisions for the adoption and implementation of Regional and intra-regional minimum terms and conditions for access?*			x	53.6%	Not yet. Fishing activities in Sudan Red Sea still small-scale (artisanal, inshore waters) no provisions for adoption and implementation of regional terms and conditions for access regarding shared fishery resources.
2	*Are there mechanisms in place for efficient and effective regional cooperation on fisheries management, including MCS, migratory and shared stocks?*			x	46.4%	More than 90% of fish exploitation by small scale fisheries in coral reefs, islands, mangroves, and some pelagic fishes in near areas, till now no mechanism in place regarding fisheries management.
Outcome 3: **Fishers are organized to foster good fisheries governance, sustainable development and responsible use of natural resources**					68.6%	
1	*Are the international Guidelines for Securing Sustainable Small-scale Fisheries appropriately applied?*	X			67.9%	Small scale fisheries, totally managed by fisheries law in inland fisheries, and state marine fisheries law (2008) in Red Sea, banned Shark fishing, mammals, sea turtles as an international guideline for securing sustainable small-scale fisheries. And also, there are two MPAs declared by UNESCO 2004
2	*Are provisions made for the capacity of fisheries stakeholders and institutions for participatory management of the fisheries to be developed and nurtured?*		x		69.2%	Pillar No. 4 in Sudan national Fisheries and aquaculture policy: effective fisheries co-management: The organizational and fisheries management capabilities of community associations will be strengthened by training. One of the objective of this pillar, is to establish participatory control of access to fisheries

POLICY AREA 2B: Identification, Development and Promotion of Estuarine and Mangrove-based Shellfisheries (EMS) among the AU-MS						
Criteria for Alignment YES		Check **X** to Indicate if:			Level of Alignment (%)	Comment and Reference
		IN PART	NO	42.8%		
OUTCOME 1: Recognition of EMS among AU-MS					41%	
1	*Are there provisions to account for EMS among AU-MS?*			x	35.7%	No
2	*Do AU-MS assign budget allocations to the conservation and development of EMS?*			x	46.2%	No budget allocated from the government for the conservation and development of EMS, but some small projects by PERSGA, and UNEP were taking place in some mangrove areas in Sudan Red Sea coast.

OUTCOME 2: Management of EMS among AU-MS						
1	*Are the estuarine and mangrove-based shellfisheries co-managed?*		X		53.6%	Yes to some extent. Fisheries management is a responsibility of Fisheries Administration, but in case of MPA it managed by Wildlife protection Administration (police), and Marine Fisheries Administration.
2	*Are catch data in EMS recorded regularly to inform management strategies?*			X	46.4%	The catch data generally taken from fish market by fish inspectors from fisheries administration. No specification for EMS.
OUTCOME 3: Promotion of EMS among AU-MS						
1	Are there strategies to promote EMS on the local and international markets?			X	37.5%	Not yet

POLICY AREA 3: SUSTAINABLE AQUACULTURE MANAGEMENT						
Criteria for Alignment YES		Check **X** to Indicate if:			Level of Alignment (%)	Comment and Reference
		IN PART	**NO**	49.5%		
Outcome 1: Improved market-led aquaculture investments					44.6%	
1	*Are market campaigns included for aquaculture products (awareness creation, PPPPs – Price, Place, Promotion and Product)?*			X	46.4%	No
2	*Aquaculture infrastructure- Are there measures for the state to provide basic infrastructure for aquaculture development?*		X		50%	Yes
3	*Financing/investment strategy - Are there strategies for the promotion of financial instruments such as guarantee funds, micro-credit institutions?*		X		46.4%	In the year 2018 with FAO assistance Sudan developed a fishery investment plan. There is a micro-financing foundation, supervised by Sudan Central Bank.
4	*Quality assurance and standards* - Are there provisions for aquaculture product labelling and traceability through certification programmes?		X		28.5%	Pillar No. 3 in Sudan national Fisheries and aquaculture policy: The government is committed to providing a more enabling and supportive environment to larger-scale commercial aquaculture linked to modern fish quality assurance and marketing systems.
5	*Skills development plan - Are there provisions in the policy for aquaculture development plan and strategies to appropriately address competencies and skills development?*		X		46.4%	Pillar No. 3 in Sudan national Fisheries and aquaculture policy Aquaculture development using technology and knowledge transfer from proven success outside Sudan
6	*Research and Extension Services - Are there provisions of adequate funding for research to enhance technology development and innovation?*		X		35.7%	Currently no funds for research to enhance technology development and innovation, the country before the current war in Sudan, allocated research budgets for research corporations, and for faculties and research centers in higher education. from 2023 till now, no funding for research,
7	*Fish farmers associations or cooperatives- Is there the existence of an institutional framework to allow Fish farmers associations and cooperatives to flourish?*		X		53.5%	Yes, to some extent. Already there are some fisher's associations, and small societies. But most of them not active, and they are not finding the governmental financial and technical support.

8	*Enabling environment – Is there provision of policy and institutional framework as well as one stop shop to facilitate registrations and investments by the private sectors?*		X		57.1%	Pillar No. 5 in Sudan national Fisheries and aquaculture policy: Business and trade development: The private sector is considered as the engine of future growth of the fisheries sector. The governmental aims to play an enabling and supportive role in helping drive private sector growth. Currently there is no one stop shop to facilitate registration and investment by the private sector
9 10	*Growth in trade of locally produced aquaculture products- Are there measures for the protection of local aquaculture products from imported products?* *Are there programs in place to increase competitiveness of locally produced aquaculture products?*			X X	32.1% 50%	No measures for protection. There was shrimp farm in Port Sudan (*Alkhairat farm 2007-2014)*), in one year the shrimp harvested from the farm and ready for marketing, someone brought shrimp from Vietnam, with lower price, this led to profit lost for *Alkhairt* farm owner. Expenses were very high as the shrimp feed import from outside Sudan. No
Outcome 2: **Improved regional cooperation in shared ecosystems**					53.5%	
1	*Common strategies on management and research on transboundary Resources –* *Are there provisions to harmonize coherent policies, institutional and legal frameworks for aquaculture shared ecosystems?*		x		60.7%	No strategies on management and research on transboundary. But the Ministry of Higher Education and Scientific Research signed a memorandum with China for example, for doing research in higher studies (MSc and PhD). Ministers of Fisheries and Aquaculture in Red Sea Basin requested FAO for establishing Organization regarding Aquaculture management in Red Sea member States. Two meetings were attended by the author of this report in Cairo 2015, 2016 respectively about initiating of the organization, but no progress until now.
2	*Are the policies consistent with best ecosystems management approaches (e.g. FAO, EAF, EAA, CCRF)?*		X		46.4%	UNIDO's project 130130 (2014-2023) "Institutional capacity building in Red Sea State, has a component concern with Ecosystem Approach to Fisheries Management (EAFM)
3	*Conformity with accreditation mechanisms- Are the Best Management Practices (BMPs) required for certification and standardization for sustainable aquaculture practices included in the policies?*			X	53.5%	In the policy Pillar 3 in specified objectives, are to: expand and integrate commercial cage culture into reservoir management; expand and integrate commercial aquaculture into irrigated agriculture; and maximize benefits from culture-based fisheries and mariculture. (*note: the policy 2012 not implemented until now*)

	POLICY AREA 4: RESPONSIBLE AND EQUITABLE FISH TRADE AND MARKETING					
Criteria for Alignment **YES** **IN PART**		Check **X** to Indicate if:			Level of Alignment (%)	Comment and Reference
		NO	49.3%			
Outcome 1: **Improved intra and inter regional trade**					59.4%	
1	*Is there compliance with agreed regional trade protocols and regulations?*		x		60.7%	Yes, there is a compliance with agreements related to fish trade, particularly within COMESA countries, and work is underway to sign an agreement with the World Trade Organization (WTO) and benefit from fisheries support.
2	*Is it coherent with fish trade policies and other policies?*		x		64.2%	There is a mechanism that is somewhat consistent with other policies related to export, import, transport, relocation, health requirements, and other policies that facilitate trade, sale, and circulation of fish.
3	*Is it Compliant with sanitary standards and market requirements?*		x		53.5%	To some extent, there is adherence to international health standards for the fish trade in Sudan.
Outcome 2: **Increased competitiveness for African fish and fishery products**					44.2%	
1	*Economically efficient fisheries sector - Are fisheries sustainably managed and supported by appropriate infrastructure and prudent macroeconomic management?*		x		42.3%	There are some infrastructures like markets, landing sites, and refrigerated transport vehicles, that supports the economics of the fish trade.
2	*Standards and supportive technology - Is infrastructure, such as the National fisheries quality control laboratory for standardization of fishery products in place?* *Does it conform to international guidelines for certification of fishery products?*		x x		30.5% 66.6%	No specialized or specified laboratory for fisheries quality control, but there are some national laboratories belong to governmental authorities such as Standards and metrology, and custom lab. Health lab. For imported products (food, cosmetics, etc,.) The Minister of Animal Resources seeks to ISO certificates in livestock and fisheries
3	*Competitiveness through increasing value chain efficiencies - Are there appropriate pricing conditions for value addition across value chain segments?*			x	36.3%	
4	*Coherence of trade policies (harmonization) - Are national trade policies coherent and harmonized at sub regional or regional levels?*		x		42.8%	Not a policy, but Sudan exports some finfish species, sea cucumber, ornamental fish, oyster. So some authorities give certificates (health, standards and metrology, license customs)
5	*Consumer Information - Is symmetric information ensured between buyers and sellers?*		x		46.4%	

POLICY AREA 5: REGIONAL AND SUB-REGIONAL COOPERATION						
Criteria for Alignment **YES** **IN PART**		Check **X** to Indicate if:			Level of Alignment (%)	Comment and Reference
		NO	53.6%			
Outcome 1: **International fisheries issues at regional levels are coherent and harmonized**					57.3%	
1	*Are there provisions for entrenched awareness of important international instruments for sustainable fisheries management and frameworks that identify the need for their domestication in realizing sustainable fisheries management?*		x		57.1%	No provisions, if exist. Not effective.
2	*Are there measures in place to address Illegal, Unreported and Unregulated (IUU) fishing?*		x		57.1%	In the 2025 Sudan had developed National plan of Actions IUU fishing. With guidance of PERSGA, and financial support by EU
3	*Are there mechanisms to address seafood fraud?*		x		57.7%	Fish inspector from fisheries Administrations follow up and check fish markets and landing sites
Outcome 2: **RECs and RFBs are positive forces for fisheries management within the framework of regional economic and political integration agenda**					49.8%	
1	*Are there mechanisms for linkages between RECs and RFBs?*		x		53.6%	There is a linkage through COMESA countries and Red Sea region countries PERSGA, and Indian Ocean ITOC (Tuna commission)
2	*Are RECs and RFBs vehicles to promote a well-defined fishery and Aquaculture?*		x		42.3%	Not effective in Sudan
3	Are there strategies and mechanisms in place for preventing and resolving regional conflicts?		x		53.6%	The regional bodies like PERSGA, COMESA and IOTC look to prevent and resolve conflict when appear

.POLICY AREA 6: AWARENESS ENHANCING AND HUMAN CAPACITY DEVELOPMENT						
Criteria for Alignment **YES**		Check **X** to Indicate if:			Level of alignment (%)	Comment and Reference
		In part	**No**	57.7%		
Outcome 1: **Enhanced sectoral competencies and proficiencies**					54.2%	
1	***Continuous professional education, mentorship and training*** *- Are there provisions to facilitate continuous awareness and enabling environment to seize and utilize opportunities for sectoral development*		x		62.5%	UNESCO has ongoing project to develop curricula in fisheries, in the industrial higher secondary schools at Port Sudan (Red Sea State), and Kassala state.
2	***Accreditation of practitioners and institutions*** *- Are there provisions for relevant stakeholders/institutions to be accredited to maintain relevance?*		x		50%	Lack of human and institutional capacity building.
3	*Facilitate centers of excellence of fisheries and aquaculture - Provision in the national and regional policies that ensures continual establishment, development and maintenance of minimum operating standards*			X	50%	***There are no plans to establish centers of excellence***
Outcome 2: **Improved evidence-based decision making**					61.2%	
1	*Is Information-Based policy decision making evident in the policy?*		x		61.5%	Yes, despite not high accuracy in available information, but the policy based or reliable on. Limited capacity in terms of human and financial resources.

2	*What provisions exist to facilitate Information sharing between policy makers and policy consumers?*		x		53.8%	No effective communication strategy, it done through meetings, workshops, and official letters. Limited capacity in terms of human and financial resources.
3	***Responsive to real community needs -*** *What strategies exist to improve enabling conditions in fish producing communities to enhance competence?*		x		68.2%	Through capacity building, rising awareness, encourage to get fishing licenses. Extension policies deficient

POLICY AREA 7: HIGH SEAS FISHERIES –						
Criteria for Alignment YES		Check **X** to Indicate if:			Level of align-ment(%)	Comment and Reference
		In part	**NO**	52%		
Outcome 1: **Greater African Voice in high seas fisheries**					52.6%	
1	*Is there an avenue for effective participation of the MS in international deliberations, meetings, etc. and increased access to high seas fisheries?* *Have provisions been made for the MS to become a member or cooperating party of appropriate RFMOs?* *Are there modalities/provisions for the country to ratify United Nations Convention on the Law of the Sea and the FAO Port States Measures Agreement?*	X	X X		53.8% 54.2% 59.1%	Through international workshop, meetings, conferences, in person and virtually, officially, and or personally. Sudan must attend IOTC meetings but its membership not active. Not sure Creation of specialized mechanism or committees to examine relevant international laws and to advise decision makers on ratification. Sudan already ratified on UNCLOS in 1985, and underway to PSMA
2	*Are there mechanisms for strengthening the alignment of donor and partner efforts with PFRS?*		x		50%	
3	*Are there provisions for strengthening of Alignment to and co-ordination of development partners' efforts with the PFRS?*		x		45.8%	
Outcome 2: **Increased participation and benefits for MS in high seas fisheries**					48.1%	
1	*Increased access to high seas fisheries -Is there a provision made in the policy that ensures high seas resource exploitation by MS?*			x	46.2%	Limited action for ratification of relevant international measures and lack of human and financial resources.
2	*Accrued benefits to concerned MS increased - Are there programs and strategies proposed to increase investment for economic value addition (such as harbour)*		x		50%	Sea port corporation construct Hydob port for livestock and fisheries exports. But due to technical faults in the operation, the port didn't work. In 2018 Sudan with aid of FAO developed investment plan for fisheries and aquaculture
Outcome 3: **Active participation of MS in RFMOs processes and agenda**					55.4%	
1	*Cooperation for high sea fisheries management - What provisions are there to facilitate management decisions for active roles in intergovernmental cooperation?* *Are there modalities guiding the participation in newly established partnerships?*		 x	x	54.5% 56.3%	Some conventions and global instruments not ratified No

POLICY AREA 8: CROSS CUTTING ISSUES IN AFRICAN FISHERIES AND AQUACULTURE

A. Strengthening resilience and reducing vulnerabilities to climate change in African fisheries and aquaculture						
Criteria for Alignment YES		Check **X** to Indicate if:			Level of Alignment (%)	Comment and Reference
		IN PART	**NO**	52.4%		
OUTCOME 1: Adaptive capacity and resilience at the local level built					48.5%	
1	*Capacity building Programme on climate smart fisheries - Is there promotion of capacity building in the sector on climate change?*		x		53.6%	No specified programs on climate smart fisheries and no promotion of capacity building in fishing sector on climate change.
2	*Communication systems- Are there systems on participatory Climate Change (CC) and Disaster Risk (DR) vulnerability assessment and aquaculture development?*		x		35.7%	No Communication systems- Are there systems on participatory Climate Change (CC) and Disaster Risk (DR) vulnerability assessment and aquaculture development
3	*Facilitate the creation of alternative livelihoods - Are there available opportunities for at least temporary shifting to alternative occupation in the event of shocks?*		X		65.4%	Provisions for adaptive training non-existent. Establish mechanism to provide adaptive training for alternatives livelihoods options.
4	*Early warning system in place as a focus for disaster - Are there provisions for early warning mechanisms at national level?*		X		41.7%	Very limited, not effective if exist
5	*Formulating mechanisms for disaster-related insurance and compensation*			X	46.1%	No available compensation mechanism
OUTCOME 2: Policy coherence and coordination at the national and regional levels improved					42.5%	
1	*Do the Disaster risk management (DRM) and climate change Adaptation (CCA) policies include fisheries and aquaculture?*		x		46.4%	Yes, climate change Adaptation (CCA) policies include fisheries and aquaculture. But Fisheries and aquaculture policy, and Fisheries Investment plan, not include climate change adaptation or disaster risk management
2	*Do the Fisheries and aquaculture policies include DRM and CCA?*			x	41.7%	No
3	*Are there policies for marine spatial planning?*		X		39.3%	Marine Protected Areas in Sudan Red Sea, with limited capacity to enforce.
B. Gender and Youth						
OUTCOME 1: Increased access to resources					62.2%	
1	*Do policies and interventions aim at attracting women and youth?* *Do they address key barriers and constraints to entry and access to land and water?*	x	 x		75% 57.1%	Women participation in fisheries sector is relatively weak, there is women fisher's friends association in Suakin. in government institution related to fisheries sector is high (scientist, academic, and fish inspectors), also some women have business as restaurants, fish processing units, etc., For youth most of fishers specially in Red Sea coast are youth, this means that the fisheries sector is attractive for generating income. In some areas of Sudan women participation is a social issue. There is no legal constrains for women to take part in some fisheries activities apart from some social consideration
2	*Security of investment and access rights and ownership - Does the policy have provisions for the system to ensure security of investments and market certainty?*		X		54.5%	Not mentioned clearly un the policy, but in pillar 5, the objectives are to: adopt business development approach to fisheries, and to improve fish quality and increase added value, improve marketing efficiencies, and establish fish trade mechanisms.

C. Private Sector Investments and Financing Mechanisms for Fisheries and Aquaculture in Africa						
OUTCOME 1: Improved enterprise performance within the fisheries and aquaculture sector		**YES**	**IN PART**	**NO**	49.4%	
1	*World Bank ease of doing business index - Does the policy comply with WB for creating efficient and inclusive practices/values for enterprise and business?*			x	30%	Not included in the policy.
2	*Global competitiveness report of World Economic Forum - Does the policy Conform with the Global Competitiveness Report of World Economic Forum (WEF)?*			X	39.3%	The policy concentrated on localization and national levels (state and federal levels).
3	*World Bank Fisheries Performance indicators - Does it align with the WB Fishery Performance Indicators (FPIs)?*		x		38.5%	Enterprise performance fall short of WB indicators
4	*Awareness of diversity of business structures - Are there provisions for awareness creation that enable practitioners and enterprise owners?*			X	26.9%	Not clear that the policy concern with.
OUTCOME 2: Improved private sector governance						
1	Consistency with industry best practices - Are the policies consistent with efficient structures that enable effective and well-documented best practices?		X		65%	Not yet

ANNEX (2): ASSESSMENT OF THE ALIGNMENT OF NATIONAL FISHERIES-AQUACULTURE STRATEGIES AND THE NATIONAL AGRICULTURAL INVESTMENT PLANS TO THE POLICY FRAMEWORK AND REFORM STRATEGY FOR FISHERIES AND AQUACULTURE IN AFRICA AND CLIMATE-CHANGE ADAPTATION

TERMS OF REFERENCE

BACKGROUND INFORMATION

1.1. The Assignment

The purpose of this service contract is to support African Union Member States (AU-MS) successfully develop and implement national fisheries and aquaculture sectoral strategies and National Agricultural Investment Plans (NAIPs) that are aligned to the Policy Framework and Reform Strategy for Fisheries and Aquaculture in Africa (PFRS) and climate change adaptation. The aim of this is to benchmark and establish twinning mechanisms for peer review to strengthen coherence in the sector to the PFRS and capacity for realistic fisheries and aquaculture policy making.

1.2. Contracting authority

African Union – Interafrican Bureau for Animal Resources, Nairobi, Kenya.

1.3. Background

Africa's fishery sector produces over 11 million tons of fish annually employs over 12 million people, contributes 1.24% of continental GDP and is a major source of food for over 200 million Africans. It is among the primary food and nutrition as well as livelihood sources for several rural communities. The sustainability and expansion of the sector are therefore among Africa's prospects for reducing poverty and spurring rural development and socio-economic growth.

The sustainability of Africa's fisheries sector unfortunately remains challenged by poor governance, low levels of investment, environmental degradation and climate-change. Environmental degradation and climate-change have been cited as causes for loss of breeding and fishing grounds, diminution of fish landing sites and reduced fish production in the small-scale fisheries and aquaculture sub-sectors. Livelihoods and thus, the socio-economic status of rural fishing communities has progressively become at stake. The contribution of the sector towards African Union Member State's (AU-MS) national GDP's, food and nutrition security and rural development is consequently below the anticipated most AU-MS national goals for the sector.

The PFRS seeks to address the bottlenecks hindering the establishment of sustainable climate-smart commercial fisheries and aquaculture development by anchoring on promoting healthy aquatic ecosystems and equitable trade as foundation stones for the sector. Similarly, the Africa Blue Economy Strategy (ABES) seeks to expand the economic opportunities derived from the fisheries sector based upon the same principles.

Africa Development Bank (AfDB) analyses indicate that poverty levels in Africa can be halved by promoting

agricultural growth alone. Investment in Africa's agricultural sector would also address most of Africa's food and nutrition security concerns. The Comprehensive African Agriculture Development Program (CAADP) articulates these prospects into a framework that guides investment to transform and accelerate agricultural growth in Africa. Hence, Africa's Head of State and Government (AHSG) endorsed the CAADP in 2003 in commitment to boosting investment for agricultural development. The implementation of the CAADP has been cascaded down to the regional and national levels through Regional Agricultural Investment Plans (RAIPs) and National Agricultural Investment Plans (NAIPs) to facilitate the realization of this broad objective across the continent. The RAIPs and NAIPs aim to mobilize resources for investment to effectively harness the economic opportunities offered by agricultural, considering the comparative advantage of each of the agricultural sub-sectors within the respective Regional Economic Communities (RECs) and Member States (MS).

A nation's capacity for responsible use and management of its natural resources greatly determines the extent to which it can effectively harness these resources sustainably through agriculture. The NAIPs and RAIPs were designed as tools to help AU-MS and RECs generate and direct resources from the public and private sectors to meet their sectoral CAADP targets. In this regard, they provide a framework through which wide range of resources can simultaneously be harnessed for public investment notably institutional and policy structures, infrastructure, technology, human resource development, private-sector organizations and natural resources. They present one of the most practical approaches for pooling scarce resources from the public and private sectors to attain the levels of investment needed to more effectively accomplish regional or national development goals. The value of NAIPs and RAIPs that holistically address sustainable agricultural development within the context of natural resource management and climate-change for robust and resilient agricultural value-chain development cannot be understated.

1.4. Current situation in the sector

Africa's fisheries-aquaculture sector transcends a wide range of ecological habitats and socio-economic environments. Its oceans, rivers and lakes support the continent's fisheries and growing aquaculture sub-sector. About 31% of Africa's land surface area is suitable for small-scale fish farming and 13% suitable for commercial fish farming.

The sustainable development of Africa's fisheries and aquaculture potential is unfortunately beset by growing threats to its aquatic resources arising from pollution, environmental degradation, inundation of wetlands, flooding, sedimentation, climate-change and inadequate fishery management policies and practices. These factors have negatively impacted water quality, breeding grounds and the status of fish populations. Increased reports of the destruction of aquaculture infrastructure after adverse climatic events are a growing concern. Traditional fish processing practices such as fish drying and smoking are weather and wood dependent. Thus, they are susceptible to climate-change events and contribute to deforestation and carbon-gas emissions. Meeting sanitary and market standards under such these conditions remains an uphill task for producers. Dedicated investment to address impacts related to environmental degradation and climate-change systematically across the continent's fishery and aquaculture value-chain to establish resilience has generally been overlooked; and is perpetuating the business and sustainability risks the sector is facing.

Ensuring NAIPs and RAIPs become fully aligned to the PFRS and the respective environmental management and climate-Change adaptation plans will go a long way in fostering the resilience, performance and sustainability of Africa's fishery and aquaculture sectors. The finding from this consultancy facilitates the strengthening the level of coherence and realistic policy making and budgeting for sustainable fisheries-aquaculture development as prospects for twinning those with and without PFRS aligned strategies and investment plans as a peer review mechanism will better be elaborated.

2.0. OBJECTIVES, PURPOSE & EXPECTED RESULTS

2.1. Overall objectives

To assess the extent to which AU-MS have aligned their NAIPs to their fisheries and aquaculture strategies and investment plans aligned to the PFRS, environmental management and climate-change adaptation action plans and are benefiting from this action.

The initial focus for this assessment is the most vulnerable and fragile AU-MS on the continent, namely: Somalia South Sudan, Democratic Republic Congo, Libya, Chad, Sudan, Central Africa Republic, Sahrawi, Zambia, Zimbabwe, Lesotho, Madagascar, Niger, Burkina Faso and Liberia.

2.2. Purpose

The purpose of this contract is to:

Review the NAIPS, fisheries & aquaculture strategies, national environmental and national climate change action plans as well as other relevant literature & consultant with stakeholders through workshop discussions to assess the status of change impacts and initiatives to strengthen climate change resilience for example specific programs geared towards climate-smart fisheries-aquaculture development in Africa (including on raising public awareness).

Undertake a SWOT analysis to assess the extent to which the PFRS and climate change has been mainstreamed into NAIPs and the impacts thereof based on PFRS Implementation Guidelines and CAADP compacts.

Compile national success stories as case studies demonstrating the benefits and challenges associated with mainstreaming climate-change into the fisheries-aquaculture industry for lessons learning and knowing sharing.

Recommendations for the way forward showing options for policy, resource mobilization and building partnerships to promote the adoption and implementation of climate-smart environmentally sustainable fisheries-aquaculture development aligned to the PFRS among AU-MS and other stakeholder initiatives within the industry.

Draft a report of findings

Find below a checklist to guide you identify relevant literature, key stakeholders to interview and organize as well as facilitate discussions/discussion groups during the workshops.

Alignment of NAIPs and RAIPs to climate Change and environmental management

Guidelines for Assignment

- Does your country have a: (Yes/No. If yes, give title, reference and share copy/URL link)
- National Climate Change Adaptation Plan
- National Fisheries and Aquaculture Development Policy and Plan
- National Environmental Management Policy and Plan
- National Agricultural Investment Plan

What does the National Climate Change Adaptation Plan describe and qualify (e.g. high, low risk) the:

	climate-change vulnerabilities and risks	**Anticipated Risks**	**Proposed mitigation measures**
Overall/generally for the country			
Aquatic ecosystems			
Fisheries and aquaculture			

What does the National Fisheries and Aquaculture Development Policies/Plan say about climate change? Can include other relevant documents/policies that influence fisheries and aquaculture development in your country

Name and Reference of Document	**Quote what document states on climate change in the sector** *(e.g. nothing, only mentions 'climate change under sections…., page#)*	Remarks if any

May you elaborate the climate change risks and impacts identified in the documents above for the fisheries and aquaculture in the table below: (please specify whether referring to freshwater/marine aquatic environment)

Drivers	**Biophysical Impacts**	**Implications**	**Proposed Risk Mitigation Measures**
Changes surface water temperature			
El Niño-Southern Oscillation			
Rising sea level			
Higher inland water temperatures			
Changes in precipitation and water availability			
Increase in frequency and/or intensity of storms			
Drought			

Are any of the issues raised in table 4 above addressed in the National Environmental Management Policy and Plan and National Agricultural Investment Plan

Issue	**State how it is address in NEMA**	**State how it is addressed in NAIP**	**Remarks**
	Generally specifically,	Generally specifically,	

Based on the information and deductions derived above, what is your SWOT analysis of the NAIP on issues pertaining to climate change and environmental management and related policies for the fisheries and aquaculture

NAIPs

Strengths	Weaknesses
Opportunities	Threats

Your general remarks and recommendations if any

National fisheries and aquaculture policies and development plans

Strengths	Weaknesses
Opportunities	Threats

Your general remarks and recommendations if any

National Environmental Management Policies and Plans

Strengths	Weaknesses
Opportunities	Threats

Your general remarks and recommendations if any

National Climate Change Action Plan

Strengths	Weaknesses
Opportunities	Threats

Your general remarks and recommendations if any

General Comments and Recommendations

ANNEX 3. SYNPOTIC SUMMARY OF PROJECTED REGIONAL CLIMATE CHANGE PROJECTIONS ACROSS THE AFRICAN CONTINENT AND THEIR POSSIBLE EFFECTS ON FISHERIES AND AQUACULTURE.

Region	Likely change	Possible effects on fisheries	Possible effects on aquaculture
North Africa	Decrease in precipitation around Mediterranean, Decline in Nile river flow[13]	Changes in primary production patterns of the base of the food chain, as well as fish composition, relative abundance, biomass and distribution[14] Nile flow is estimated to reduce by 68% with a temperature increase of 4 °C ar reaching consequences for the food security[15] The need to resettle many households in the Nile delta affected by this would negatively affect livelihoods of fishers. [1]	Decrease in freshwater available for aquaculture, poorer water quality, and increased salinity threatens pond aquaculture production in the Nile delta[2].
	Changes in oceanic thermohaline structure, increased temperatures. Temperatures in the eastern portion of Mediterranean are rising twice as fast as the global average. Average annual temperatures in the Mediterranean are expected to rise 1 °C by 2050, and 1.9 °C by 2100. By the end of the century, marine heatwave days will increase by a factor of 16–23. The latter will result in temperature anomalies exceeding 2.5 °C and lasting over 100 days.	Proliferation of gelatinous species, decline in species richness, mass mortality events. Changes in fish composition, relative abundance, biomass and distribution. Changes in coral reef communities[3]. Many communities in the southern Mediterranean depend of small-scale fishing, however this sector is likely going to be most vulnerable to ecosystem and distribution shifts of target species as small scale fishers often have limited societal capacity to adapt to changes.[4]	Fish farms and small waterways are more vulnerable than fish in the sea and large water bodies. Increased stress from increased temperature and reduced oxygen levels for cultured fish and shellfish resulting in compromised immune systems, higher disease incidence and mass mortalities. Some shallow areas such as the Nile delta become unsuitable for year-round pond aquaculture[5].

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	Sea level rise by 85cm by the end of the century	Nile Delta: 'Rising sea level would destroy weak parts of the sand belt, which is essential for the protection of lagoons and the low-lying reclaimed lands. The impacts would be very serious: One third of Egypt's fish catches are made in the lagoons. Sea level rise would change the water quality and affect most freshwater fish.'[21]	Coastal erosion and subsidence. A large area of the Nile Delta (approximately 2,671 square kilometers) would be inundated, which means that 10 per cent of the entire area would be directly vulnerable to inundation and saltwater intrusion reducing pond aquaculture production[67].
East Africa	Increases in frequency and intensity of tropical cyclones38	Destruction of coastal habitats and river flow in near coast areas . The projected increase in frequency of heavy rains (especially during the short rains) and tropical cyclones are likely to affect rural and coastal community infrastructure40	Storm events may destroy coastal aquaculture installations such as hatcheries, prawn ponds and sea cucumber enclosures.
	Rising SST and ocean acidification. Changes in the Walker circulation are projected to lead to increased precipitation over the horn of Africa[41].	Threat to coral reef communities through bleaching; weakening of the Northeast monsoon and slight strengthening of the Southeast monsoon, reduced upwelling, major changes in distribution of large pelagic species, deterioration of skipjack habitat[8] The rise in SST of between 2,5 and 5 degrees in the West Indian ocean is projected to lead to a decrease in species richness and biomass (biomass reductions of around or more than 50% are predicted for the waters of Kenya and Tanzania by the end of the century)[9][10]. This will likely lead to extreme food scarcity and fisheries collapses, directly impacting the local populations and their economies as just currently more than 60 million people depend directly on fisheries for their livelihoods in the region (Robers power point).	Cultured shellfish larval stages shell formation negatively affected by reduced pH.

The source of the table: Sauer WS, Eggers J, and Britz PJ (2023).

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ANNEX 4. THE SOURCE OF THE BELOW TABLE IS: SAUER WS, EGGERS J, AND BRITZ PJ (2023), DETAILS IN REFERENCES LIST.

Country:	Sudan
NAPA	1: National Adaptation Plan (NAP) (2016)
NC	2: Sudan's Second National Communication under the United Nations Framework Convention on Climate Change (2013)
NDC	2: An interim Submission: Sudan's updated First Nationally Determined Contribution (NDC) (2021)
Climate Change Policy Dashboard	
National Climate Change Vulnerability assessment	
https://climateknowledgeportal.worldbank.org/country/sudan/vulnerability	
Inclusion of fisheries and aquaculture National climate change policy/ adaptation plan	Fisheries: NAP: moderate detail, CDN and 2NC: little detail. Aquaculture: NAP: little detail, CDN and NC2: no mention
Inclusion of climate change in national fishery/aquaculture policy	The main piece of fisheries legislation is the Freshwater Fisheries Act (1954), amended in 1960 and again in 1995, which remains the key policy instrument for the management of inland fisheries, and the Marine Fisheries Ordinance (1937), amended and renamed as the Marine Fisheries Regulation (1960). Both are outdated, don't mention climate change and no document pertaining especially to aquaculture appears to exist.
National Policy/ adaptation plans for fisheries and aquaculture	No such document exists yet, however, there appears to be a move towards developing a Blue Economy Strategy (2023-2027) https://suna-sd.net/read?id=763975 but it does not appear to have been finalized yet.
Summary: While Sudan is up to date on its Adaptation Plan and national submissions to the UNFCC, the mention of fisheries and aquaculture in those is not highly detailed, and the policies/laws related to those sectors are highly outdated. Developing a Blue Economy Strategy would be of much value for Sudan.	

ANNEX 5. THE SOURCE OF THE TABLE: WORLD FISH CENTER, POLICY BRIEF, THE THREAT TO FISHERIES AND AQUACULTURE FROM CLIMATE CHANGE (WWW.DFID.GOV.UK)

Table 1. Ways in which climate change may directly affect production from fisheries and aquaculture		
Drivers	**Biophysical Effects**	**Implications for fisheries and aquaculture**
Changes in sea surface temperature	More frequent harmful algal blooms; Less dissolved oxygen; Increased incidence of disease and parasites; Altered local ecosystems with changes in competitors, predators and invasive species; Changes in plankton composition.	For aquaculture, changes in infrastructure and operating costs from worsened infestations of fouling organisms, pests, nuisance species and/or predators. For capture fisheries, impacts on the abundance and species composition of fish stocks.
	Longer growing seasons; Lower natural mortality in winter; Enhanced metabolic and growth rates.	Potential for increased production and profit, especially for aquaculture.
	Enhanced primary productivity.	Potential benefits for aquaculture and fisheries but perhaps offset by changed species composition.
	Changes in timing and success of migrations, spawning and peak abundance, as well as in sex ratios.	Potential loss of species or shift in composition in capture fisheries; Impacts on seed availability for aquaculture.
	Change in the location and size of suitable range for particular species.	Aquaculture opportunities both lost and gained. Potential species loss and altered species composition for capture fisheries.
	Damage to coral reefs that serve as breeding habitats and may help protect the shore from wave action (the exposure to which may rise along with sea levels).	Reduced recruitment of fishery species. Worsened wave damage to infrastructure or flooding from storm surges.
El Niño-Southern Oscillation	Changed location and timing of ocean currents and upwelling alters nutrient supply in surface waters and, consequently, primary productivity.	Changes in the distribution and productivity of open sea fisheries.
	Changed ocean temperature and bleached coral	Reduced productivity of reef fisheries.
	Altered rainfall patterns bring flood and drought.	See impacts for precipitation trends, drought and flooding above.
Rising sea level	Loss of land.	Reduced area available for aquaculture. Loss of freshwater fisheries.
	Changes to estuary systems.	Shifts in species abundance, distribution and composition of fish stocks and aquaculture seed.
	Saltwater infusion into groundwater.	Damage to freshwater capture fisheries. Reduced freshwater availability for aquaculture and a shift to brackish water species.
	Loss of coastal ecosystems such as mangrove forests.	Reduced recruitment and stocks for capture fisheries and seed for aquaculture. Worsened exposure to waves and storm surges and risk that inland aquaculture and fisheries become inundated.

Higher inland water temperatures	Increased stratification and reduced mixing of water in lakes, reducing primary productivity and ultimately food supplies for fish species.	Reductions in fish stocks.
	Raised metabolic rates increase feeding rates and growth if water quality, dissolved oxygen levels, and food supply are adequate, otherwise possibly reducing feeding and growth. Potential for enhanced primary productivity.	Possibly enhanced fish stocks for capture fisheries or else reduced growth where the food supply does not increase sufficiently in line with temperature. Possible benefits for aquaculture, especially intensive and semi-intensive pond systems.
	Shift in the location and size of the potential range for a given species.	Aquaculture opportunities both lost and gained. Potential loss of species and alteration of species composition for capture fisheries.
	Reduced water quality, especially in terms of dissolved oxygen; Changes in the range and abundance of pathogens, predators and competitors; Invasive species introduced.	Altered stocks and species composition in capture fisheries; For aquaculture, altered culture species and possibly worsened losses to disease (and so higher operating costs) and possibly higher capital costs for aeration equipment or deeper ponds.
	Changes in timing and success of migrations, spawning and peak abundance.	Potential loss of species or shift in composition for capture fisheries; Impacts on seed availability for aquaculture.
Changes in precipitation and water availability	Changes in fish migration and recruitment patterns and so in recruitment success.	Altered abundance and composition of wild stock. Impacts on seed availability for aquaculture.
	Lower water availability for aquaculture. Lower water quality causing more disease. Increased competition with other water users. Altered and reduced freshwater supplies with greater risk of drought.	Higher costs of maintaining pond water levels and from stock loss. Reduced production capacity. Conflict with other water users. Change of culture species.
	Changes in lake and river levels and the overall extent and movement patterns of surface water.	Altered distribution, composition and abundance of fish stocks. Fishers forced to migrate more and expend more effort.

ANNEX 6. LIST OF THE STAKEHOLDERS, WHO FILLING THE (ONLINE QUESTIONNAIRE)

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4.	El-Thair Hassan Mohamed Salih	Faculty of Natural Resources and Environmental Studies
5.	Hala Khidir	Faculty of Marine Sciences and Fisheries
6.	Hamad Tukulia Augan	Ex Director marine fisheries administration
7.	Hatim Kajagla	Fisheries Administration/ Khartoum
8.	Hind Sheikh Idriss	Fisheries Research Center
9.	Hussein Mohamed Ibrahim	Marine Fisheries Administration
10.	Lubna Osman	Fisheries Administration
11.	Mai Tufig	Fisheries Administration/ Khartoum
12.	Mohamed Abdelhamid	Marine Fisheries Administration
13.	Neimat Mohamed	Fisheries Research Center
14.	Yassin Mubarak	Fisheries Administration/ Khartoum

ANNEX 7. PARTICIPANTS LIST IN THE VALIDATION WORKSHOP, 7-9 APRIL, MOMBASA, KENYA

LIST OF PARTICIPANTS

Stakeholders' Consultative and Validation Workshop on the Alignment of Fisheries and Aquaculture Strategies and Agricultural Investment Plans with the PFRS and Climate-Change Adaptation, Including the Formulation of Recommendations for the Domestication of Relevant Global Instruments – Republic of The Sudan

7th-9th April 2026

The Republic of the Sudan

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ANNEX 8. NATIONAL VALIDATION WORKSHOP FOR POLICY ALIGNMENT FOR THE REPUBLIC OF SUDAN

Photo of the participants from Sudan and AU-IBAR

7th – 9th April 2026, Mombasa, Kenya







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